

**ADDENDUM 1 TO  
RESOURCE CONSERVATION AND  
RECOVERY ACT (RCRA)  
FACILITY INVESTIGATION REPORT  
FOR IRP SITES NO.17, NO.18, AND NO.21**

**VOLUME II  
APPENDICES A-L**

**148th FIGHTER GROUP  
MINNESOTA AIR NATIONAL GUARD  
DULUTH AIR NATIONAL GUARD BASE  
DULUTH, MINNESOTA**

**OCTOBER 1995**



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<b>4. TITLE AND SUBTITLE</b> Addendum 1 to Resource Conservation and Recovery Act (RCRA) Facility Investigation Report for IRP Sites NO. 17, 18, and 21. Vol. II Duluth ANG, Duluth, MN			<b>5. FUNDING NUMBERS</b>	
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<b>13. ABSTRACT (Maximum 200 words)</b> Addendum 1 to Resource Conservation and Recovery Act (RCRA) Facility Investigation Report for IRP Sites 17, 18, and 21 Volume II, appendices A-L. This report presents the results of the investigation activities conducted in July 1994, October 1994, and May 1995 at IRP sites 17, 18 and 21, located at the 148 FG, Duluth, MN. The Minnesota Pollution Control Agency (MPCA) responded to the findings of the RFI report (OPTECH 1992) with recommendations for further investigations at these sites. The results are that contamination exists at all three sites and a Corrective Measures Study (CMS) be completed to provide alternatives for remediation.				
<b>14. SUBJECT TERMS</b> Installation Restoration Program; Resource Conservation and Recovery Act (RCRA) Air National Guard; Facility Investigation; Duluth ANG, Duluth, MN			<b>15. NUMBER OF PAGES</b> 718	
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DULUTH, MINNESOTA**

**OCTOBER 1995**

*Prepared For*  
**HQ ANG/CEVR  
ANDREWS AFB, MARYLAND**

*Prepared By*  
**Operational Technologies Corporation  
4100 N.W. Loop 410, Suite 230  
San Antonio, Texas 78229-4253  
(210) 731-0000**



**APPENDIX A**  
**STATEMENT OF WORK**

## **SECTION A.1 INTRODUCTION**

The scope of work of the RCRA Facility Investigation conducted at the Minnesota Air National Guard Base, Duluth, Minnesota is outlined in the final permit for a hazardous waste storage facility issued to the Minnesota Air National Guard (ID#MND0007773341) in September, 1990 by the Minnesota Pollution Control Agency. A copy of the final permit is presented in Appendix A of the RCRA Facility Investigation of Solid Waste Management Units (OpTech, 1992). A copy of the Request for Cost Proposal and Statement of Work for the Addendum 1 to RCRA Facility Investigation for Sites No. 17, 18, and 21 is presented as follows.



DEPARTMENTS OF THE ARMY AND THE AIR FORCE  
NATIONAL GUARD BUREAU  
5109 LEESBURG PIKE, FALLS CHURCH, VIRGINIA 22041-3201



22 June 1993

RECEIVED

JUN 28 1993

NGB-AQC-E (Catia Ellsworth)

OPTECH

SUBJECT: Request for Cost Proposal, Contract DAHA90-91-D-0002,  
D.O. 0001, Addendum #1, IRP Services, Duluth ANG,  
Minnesota

OPTECH, INC.  
4100 N.W. LOOP 410  
SUITE 230  
SAN ANTONIO, TX 78229-4253

Enclosed is the Statement of Work for "Addendum #1, for IRP Services, for Duluth, Minnesota".

Please prepare a cost estimate for this effort with any necessary backup material that may be necessary to substantiate your costs.

Period of performance for this effort is 9 months from the official Notice to Proceed.

a. **DIRECT LABOR:** Indicate your rationale for the mix of labor categories and skill levels to be employed and the number of hours per category proposed. Include also all subcontracted hours with the same rationale.

b. **TRAVEL:** Although the delivery order will indicate a "not to exceed" amount, please provide an estimated total travel cost, to include number of trips. Proposed travel should indicate a complete breakdown of each trip: origin and destination, per diem costs, rental car costs, airfare, number of travelers, labor categories of travelers.

c. **OTHER COSTS:** If costs other than direct labor and travel are involved, please provide a complete breakdown and justification for those costs. Example: duplication costs should be supported by number of copies, number of pages, cost per page, etc.

Please forward your cost proposal not later than 30 Jun 93. If you have questions, please contact Catia Ellsworth at (703)756-8939.

*Mary Ellen Lewis* MAF. NGB.

MARY ELLEN LEWIS  
Contracting Officer

Enclosure

Contract No. DAHA90-91-D-0002  
Delivery Order No. 0001  
IRP Services for Duluth ANG, MN

ADDENDUM # 1  
TO THE  
STATEMENT OF WORK

Date: 10 Jun 93

Modify the Statement of Work (SOW) as follows, specifically reference Tasks 2, 3, and 4 and Table 1:

1. Task 2 - The Contractor shall write an addendum to the existing Facility Investigation Work Plan reflecting the additional field work requested by the Minnesota Pollution Control Agency (MPCA) [re MPCA ltr dated 9 Dec 92] and validated by ANGR/CEVR in their April 1993 letter of response. "Draft" and "Final" RFI Workplan Addendums will be produced and considered as Task 2A and 2B respectively (Deliverables 1A1 and 1B1).

2. Task 3 - The Contractor shall perform all work as outlined in the addendum to the existing Facility Investigation Work Plan, to include:

a. That work required to define the areal extent of SVOCs and TPH contamination at Site # 17.

b. An additional round of soil sampling to confirm the results of the existing RFI Report in the area of concern identified in the Jacobs Engineering Report, re Site #s 18 and 19.

c. That work required to define the areal extent of VOCs, SVOCs, 4,4-DDD, metals and TPH in Site # 21 sediments and soils; periodic sampling of the associated site groundwater for VOCs and Barium, and installation, development and sampling of one additional downgradient monitoring well to determine the downgradient extent of TCE. Said Field Work shall be considered as Task 3A.

3. Task 4 - The Contractor, following completion of all work outlined in the addendum to the existing Facility Investigation Work Plan, shall prepare an Amendment (supplement) to the existing RFI Report documenting the results of the field investigation. This supplemental report shall be prepared in "draft" [Task 4A] and "final" [Task 4B] forms and shall be identified as Deliverables 1A2 and 1B2 in Table 1 to the existing SOW. Based upon the results documented in the existing RFI Report and the associated supplemental report, the Contractor shall also prepare appropriate "draft" and "final" No Further Action Decision Documents (NFADDs) for Site #s 17, 18, 19, 21, and 22 or appropriate recommendations for initiation of a Corrective Measures Study Report as outlined in Task 5 of the existing SOW. If said reports results in the preparation of any NFADDs, they shall be prepared (under separate cover) and considered to be part and parcel of Deliverables 1A2 and 1B2. In addition to the above, the Contractor shall plan to attend one (1) Review Meeting (Task 4C) to discuss comments from the MPCA regarding the "Draft RFI Report Amendment". This meeting is necessary to incorporate any regulatory agency comments/suggestions into the final report.

4. The Contractor shall submit to NGB Monthly Progress Reports (Task 4D) as outlined in paragraph 4.0 of the existing SOW. For the purposes of this SOW Addendum said reports shall be considered as Deliverable 4A. It is estimated that the period of performance for the tasks outlined in this SOW Addendum shall be nine (9) months from NTP.

5. Table 1 - Table 1 is hereby modified to include the following Deliverables:

- a. Deliverable 1A1 - Draft RFI Workplan (Addendum)
- b. Deliverable 1B1 - Final RFI Workplan (Addendum)
- c. Deliverable 1A2 - Draft RFI Report (Amendment) & Associated NFADDs
- d. Deliverable 1B2 - Final RFI Report (Amendment) & Associated NFADDs
- e. Deliverable 4A - Monthly Progress Reports

Time allowed for Tasks and Copies Required for Tasks 2A and 4A are to be the same as those listed for Deliverable 1A; for Tasks 2B and 4B the same as those listed for Deliverable 1B; and for Task 4D the same as that listed for Deliverable 4. Note 1 applies to Deliverables 1A1 and 1A2, Note 2 applies to Deliverables 1B1 and 1B2, and Note 3 applies to Deliverable 4A.



## DEPARTMENT OF THE AIR FORCE

AIR NATIONAL GUARD READINESS CENTER  
ANDREWS AIR FORCE BASE, DC 20331-6008

FROM: CEVR

SUBJ: Modification of Contract # DAHA90-91-D-0002, Delivery Order #0001  
IRP Services for the ANG, Duluth, MN Statement of Work

TO: NGB-AQC-E (Ms Catia Ellsworth)

1. Request the following modifications be made to the subject Statement of Work (SOW), specifically reference Tasks 2, 3, and 4 and Table 1:

a. Task 2 - The Contractor shall write an addendum to the existing Facility Investigation Work Plan reflecting the additional field work requested by the Minnesota Pollution Control Agency (MPCA) [re MPCA ltr dated 9 Dec 92] and validated by ANGR/CEVR in their April 1993 letter of response.

b. Task 3 - The Contractor shall perform all work as outlined in the addendum to the existing Facility Investigation Work Plan, to include:

1) That work required to define the areal extent of SVOCs and TPH contamination at Site # 17.

2) An additional round of soil sampling to confirm the results of the existing RFI Report in the area of concern identified in the Jacobs Engineering Report, re Site #s 18 and 19.

3) That work required to define the areal extent of VOCs, SVOCs, 4,4-DDD, metals and TPH in Site # 21 sediments and soils; periodic sampling of the associated site groundwater for VOCs and Barium, and installation/development/sampling of one additional downgradient monitoring well to determine the downgradient extent of TCE.

c. Task 4 - The Contractor, following completion of all work outlined in the addendum to the existing Facility Investigation Work Plan, shall prepare a supplement to the existing RFI Report documenting the results of the field investigation. This supplemental report shall be prepared in "draft" and "final" forms and shall be identified as Deliverables 1A1 and 1B1 in Table 1 to the existing SOW. Based upon the results documented in the existing RFI Report and the associated supplemental report, the Contractor shall also prepare appropriate "draft" and "final" No Further Action Decision Documents (NFADDs) for Site #s 17, 18, 19, 21, and 22 or appropriate recommendations for initiation of a Corrective Measures Study Report as outlined in Task 5 of the

existing SOW. If said reports result in the preparation of any NFADDs, they shall be prepared (under separate cover) and considered to be part and parcel of Deliverables 1A1 and 1B1.

d. Table 1 - Table 1 is hereby modified to include the following Deliverables:

1) Deliverable 1A1 - Draft Supplemental Facility Investigation Report and NFADD's.

2) Deliverable 1B1 - Final Supplemental Facility Investigation Report and NFADD's.

Time allowed for Task and Copies Required are to be the same as those listed for Deliverables 1A and 1B. Notes 1 and 2 apply to Deliverables 1A1 and 1B1 respectively.

2. Refer to Atch 1 for the Government Estimate for the additional work outlined in paragraph 1 to this letter. Any questions concerning this request for modification of the existing SOW should be directed to the ANGRC/CEVR POC and COR for Delivery Order # 0001, Lt.Col., Michael C. Washeleski, at DSN: 858-8144 or Comm (301) 981-8144.

GARY L. HINKLE, Chief  
Installation Restoration Prg Br  
Environmental Division

1 Atch: Gov't Estimate

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**APPENDIX B**  
**PROCEDURES AND PROTOCOLS**

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## **PROCEDURES AND PROTOCOLS**

### **FIELD INVESTIGATION STRATEGY**

#### **Mobilization Activities**

Mobilization included efforts by the Minnesota Air National Guard (MNANG) and its contractors to prepare for field activities. All field personnel were equipped with appropriate personal safety equipment, safety training, and field monitoring equipment.

Prior to any drilling activities, the Base Civil Engineer was consulted for utility locations. A general review of underground utility maps for each area was conducted. Digging Permits were completed and submitted to the appropriate Base personnel for approval.

Huntingdon Engineering & Environmental Corporation, of Duluth, Minnesota was retained as the drilling contractor for drilling boreholes and for installation of the monitoring well. The selected drilling contractor mobilized personnel and equipment that met or exceeded MNANG and the Minnesota Department of Health (MDH) requirements.

Southern Petroleum Environmental Laboratory, Inc. of Houston, Texas was retained as a qualified CLP laboratory to perform analysis. Provisions were made for proper sample containers, labels, chain-of-custody forms, sample stabilization and preservation, insulated sample shipping containers, and packing materials.

RREM, Inc., of Superior, Wisconsin was retained as the surveying contractor. All soil boring locations, soil sediment locations, and the monitoring well were surveyed. The elevations of the well and borings are recorded on the drilling logs in Appendix D.

#### **Decontamination**

A decontamination area was provided at the vehicle maintenance area. The drill rig and drilling equipment was decontaminated prior to mobilization to each site. Decontamination procedures involved thoroughly steam cleaning the drilling equipment, particularly the downhole tools such as augers, drill bits, and drill steel.

Decontamination stations were set up at each work site for decontamination of sampling equipment, well casing, and screens. All sampling equipment was decontaminated prior to each sampling event. Decontamination procedures involved washing sampler parts (split-spoon, hand auger, etc.) in water with Alconox soap, a potable water rinse, a thorough rinse with deionized water, and a final rinse with methanol.

### **SUBSURFACE INVESTIGATION**

Twenty-four soil borings, four soil sediment samples, and one monitoring well were drilled and sampled at Duluth ANGB (CERCLA Sites 17, 18, and 21) to identify subsurface geologic and hydrogeologic conditions and to inspect for indications of contamination in the soil and groundwater. Soil borings, soil sediment samples, and the monitoring well were installed during

the period between July 10, 1994 and July 27, 1994 and again during the period between October 3, 1994 and October 7, 1994. All drilling at Site 17 and Site 21 was performed using hollow stem auger methods. Sampling at Site 18 was done with a hand auger.

The drilling program included 11 soil borings at Site 17, 2 hand augured soil borings at Site 18, and 11 soil borings, 4 soil sediment samples, and 1 monitoring well at Site 21. The sampling and analytical program is summarized in Tables 2.2, 2.3, 2.4, 2.5, 2.5. The soil borings were plugged back to surface with cement grout upon completion of the sampling. The monitoring well was completed with stainless steel screens and risers.

### **Borehole Logging and Sampling**

An onsite geologist recorded the lithology during the drilling of each borehole. A field log recorded the following information for each well or boring:

Date.

Well or boring identification number and location.

Nominal hole diameter.

Name of driller and geologist.

Sampling method.

Depth interval from which each formation sample was taken.

Number of SPT blows.

PID readings.

Reference elevations for all depth measurements.

Depth of each change of stratum.

Description and classification of the material encountered according to the Unified Soils Classification System, or standard rock nomenclature, as appropriate.

Depth at which groundwater is first encountered while drilling.

Depth of complete well or borehole.

Location of any fractures, joints, cavities, weathered zones identified.

Depth of any grouting or sealing, and the amount of cement and/or bentonite used.

Depth and type of well casing.

Description of well screen and riser pipe.

Depth to water before development begins.

Depth to top of screen.

Static water level upon completion of the well and after development.

Pertinent construction details.

Description of any difficulties encountered during well drilling or construction.

Documentation of PID, pH, and specific conductance meter calibration.

Temperature, pH, and specific conductance measurements for initial groundwater sampling and for subsequent samples.

Signatures of those performing the work.

Soil from the monitoring well boring was collected with decontaminated split spoon samplers for PID measurements, GC analysis, and lithology descriptions only.

## **Drilling and Sampling Procedures**

### **Soil Borings**

Soil borings were installed at CERCLA Sites 17, 18, and 21. The soil borings at Sites 17 and 21 were drilled with a rig equipped with continuous flight 6" x 4-1/4" hollow-stem augers. The soil borings at Site 18 were drilled with a hand auger. Decontaminated auger sections were used on each borehole. Decontamination of all the augers used at a site was performed before mobilizing to each site. Soil samples were collected and field screened at five foot intervals. A stainless steel California-style, split spoon sampler equipped with four 6-inch long, 2.5-inch diameter brass sleeves was used for sampling immediately below the surface and immediately above the water table. These samples were submitted for laboratory analysis. The depth of the soil test borings was limited to the depth where saturated alluvium was encountered. Actual sample depths submitted for laboratory analysis are discussed in Section 3 and shown on the borehole logs included in Appendix D. Soil collected in the brass sleeves that was not needed for laboratory analysis was used for PID headspace readings, GC analysis, and for lithology descriptions. The California-style split spoon sampler was decontaminated before each sampling event. New brass sleeves were used for each sampling event.

Upon completion of the sampling, the borehole was grouted back to the surface with Portland cement. Each borehole was staked for coordinate location and elevation by the surveyor.

## Monitoring Well

Monitoring well 021-026MW was installed at CERCLA Site 21. The monitoring well was drilled with a drill rig equipped with continuous flight 8" x 6-1/4" hollow stem augers. Decontaminated auger sections were used on the borehole. Decontamination of all the augers used at a site was performed before mobilization. A split spoon sampler was employed at a point just below the surface and at 5-foot depth intervals thereafter. Sample depths are discussed in Section 3 and shown on the borehole logs included in Appendix D. Soil samples were collected at these points for headspace readings with a PID, GC analysis, and for lithology descriptions. Split spoon samplers were decontaminated before each sampling event.

The monitor well was constructed with 2-inch diameter, stainless steel, flush coupled and threaded casing, and wire wrapped stainless steel screen. The screen slot size was 0.010 inch. All pipe was decontaminated before placing it into the well bore. The well bore was completed as follows:

The well was drilled to a total depth of approximately 12-feet into the saturated zone.

The bottom 2-feet of the well bore was packed with sand.

A 10-foot wire wrapped stainless steel screen with bottom cap and stainless steel riser of an appropriate length above the screen was placed on top of the sand in the well bore.

Due to well construction restraints, the top of the screened interval was set coincident with the measured groundwater depth.

A tremie pipe was used to place sand around the well screen and riser up to a point approximately 5-feet below ground level.

A 2-foot bentonite seal was set above the sand pack and approximately 2-foot of cement was brought back to surface.

A steel protective riser with a locking top was placed over the top of the well and three guard posts were installed around the well.

The well was developed by bailing the well with a decontaminated polyvinyl chloride (PVC) bailer until pH, temperature, and conductivity stabilized. Once the well had recovered, the water level was measured. A photograph of a water sample from the well was taken and the pH, temperature, and conductivity were measured.

Approximately three well volumes were removed before sampling. Water samples were obtained using a decontaminated teflon bailer. The samples were collected in appropriate containers with preservatives if required and sent to the laboratory for analysis. Actual well completion diagrams are included in Appendix E. Monitor well coordinates and elevation were located by the surveyor.

## **Monitor Well Development and Groundwater Sampling**

The monitor well was developed by gentle surging and bailing. The development water was collected in drums. Three existing wells were sampled along with the new monitor well. Wells were bailed with decontaminated PVC bailers until the water became clear, and the pH, specific conductance and temperature stabilized. Prior to collecting a water sample, three well volumes were bailed from each well and collected in drums. The wells was allowed to recover. Decontaminated teflon bailers were used to collect water samples.

Groundwater samples were collected from all monitor well at CERCLA Site 21 on July 25, 1994 and again on October 6, 1994. Photographs of water samples were taken and the pH and specific conductance were measured at each well. Samples were placed in coolers and chilled for shipment to the laboratory for analysis. A trip blank was included in each cooler sent to the laboratory. One duplicate sample was collected for every ten samples. One matrix spike and matrix spike duplicate sample was collected for every twenty samples. One equipment rinseate blank sample was collected for every ten samples. One field blank sample consisting of deionized water was collected during each sampling episode. One field blank sample consisting of base tap water was collected during the October sampling round. Chain-of-custody records were maintained for all samples.

## **SURFACE INVESTIGATION**

### **Surface Sediment Sampling Procedures**

Surface sediment samples were collected at CERCLA Site 21. Sampling was conducted on July 26, 1994 and again on October 4, 1994. Samples were collected using a decontaminated stainless steel hand auger equipped with two 5-inch long, 2-inch diameter brass sleeves to minimize the loss of volatile constituents. The brass sleeves were sealed with aluminum foil, Teflon tape, and plastic caps. The sleeves were then placed in coolers and chilled for shipment to the laboratory for analysis. A trip blank was included in each cooler sent to the laboratory. One duplicate sample was collected for every ten samples. One matrix spike and matrix spike duplicate sample was collected for every twenty samples. Chain-of-custody records were maintained for all samples.

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**APPENDIX C**  
**BORING LOGS**

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## BORING LOGS

### INTRODUCTION

Boring log diagrams have been compiled for each borehole location drilled during this study. Diagrams are presented in numerical order within each site. The borehole identification is keyed to the site number (017-01BH), borehole (BH), or monitoring well designation (MW). The diagrams combine in one page both a verbal and graphical illustration of the lithology encountered during drilling, water level data encountered during drilling and surveyed elevation of the ground surface at the borehole location.

Drilling records are organized sequentially by number for boreholes and the monitor well. The borehole identification is keyed to the site number and borehole type such as soil boring for acoustic topography survey (BH) or monitoring well designation (MW).

The soil core was scanned for volatile organic compounds prior to describing the soil core and results were recorded on the boring logs. As soon as the soil core was removed from the sampling assembly, a portable OVM Model 580B photoionization detector was used to monitor for volatile organic compounds and a portable HMX251 explosimeter was used to monitor the lower explosive limit and percent oxygen.

The sample description includes the primary major component or components, color, consistency, relative density, texture, moisture and observations of each distinct lithologic change encountered. Each distinct lithologic change that was encountered was defined by the Unified Soil Classification System (USCS) which is based on texture, sorting of clasts and plasticity of soils. The color was determined by visually comparing the color of the sample with the Munsell Soil Color Charts. The texture was visually estimated and described using the following semi-quantitative adjectives:

<u>Adjective</u>	<u>Estimated Percent of Total Sample</u>
Trace	0 - 5
Little	5 - 12
Some	12 - 35
And	35 - 50

These adjectives precede the lithology, such as *little* clay (5-12% clay) or *some* sand (12-35% sand).

The classification: sand, granule, cobble, and boulder, was assigned using the grain-size scale given in the USCS. Gravel clast sizes, boulder, cobble, and pebbles, were measured using a steel tape in the field. On the original field lithologic logs, clasts that were 4 inches or greater in size and those that were from 2 to 4 inches in size were reported as boulders and cobbles, respectively.

The fine fraction was described using one of the following terms: silt, silt and clay, or clay. These are field terms and take into account plasticity as well as grain size. The distinction between clay and silt was based on how easily a small piece of soil could be rolled into a thin ribbon. Clay can easily be smeared into a ribbon when wet while silt is smeared with more difficulty. A dry sample of clay is difficult to crush with fingers while a dry sample of silt is more easily crushed.

## LITHOLOGIC LOGS

Lithologic symbols are derived and generalized from the USCS shown in Figure C.1.

In the boring logs that follow, the column headings have the following meanings:
















Depth:	Depth in feet below surface.
Blows:	The number of blows required to drive a split-spoon sampler an additional 24 inches into the ground beyond the initial 6 inch set.
Field Headspace:	The reading of photo-ionizable compounds detected in the soil sample by a photo-ionization detector.
Samples:	The interval of sample cored below land surface.
Percent Recovery:	The percentage of sample recovered in the split-spoon sampler per sampling run.
USCS:	Unified Soil Classification System based on texture, sorting of clasts and plasticity of soils.

## REFERENCES

- Casagrande, A., 1948. Classification and identification of soils. Transactions of the American Society of Civil Engineers 113:901.
- Folk, R.L., 1980. Petrology of Sedimentary Rocks. Hemphill Publishing Company. Austin, TX. p. 182.

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# KEY TO BORING LOG SYMBOLS

UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D2487					
MAJOR DIVISIONS			SYMBOL/ GRAPHIC		DESCRIPTIONS
COARSE-GRAINED SOILS (>50% Smaller Than #200 Sieve)	GRAVELS  (More than 50% of coarse fraction is larger than the #4 sieve size.)	Clean gravels with little or no fines	GW		Well-Graded Gravels, Gravel - Sand Mixtures
			GP		Poorly Graded Gravels, Gravels - Sand Mixtures
		Gravels with over 12% fines	GM		Silty Gravels, Poorly Graded Gravel-Sand-Clay Mixtures
			GC		Clayey Gravels, Poorly Graded Gravel-Sand-Clay Mixtures
	SANDS  (More than 50% of coarse fraction is smaller than the #4 sieve size.)	Clean sands with little or no fines	SW		Well-Graded Sands, Gravelly Sands
			SP		Poorly Graded Sands, Gravelly Sands
		Sands with over 12% fines	SM		Silty Sands, Poorly Graded Sand-Silt Mixtures
			SC		Clayey Sands, Poorly Graded Sand-Clay Mixtures
FINE-GRAINED SOILS (>50% Smaller Than #200 Sieve)	SILTS AND CLAYS  (Liquid limit less than 50)	ML		Inorganic Silts and Very Fine Sands, Silty or Clayey Fine Sands	
		CL		Inorganic Clays of Low to Medium Plasticity; Gravelly, Sandy or Silty Clays; Lean Clays	
		OL		Organic Clays and Organic Silty Clays of Low Plasticity	
	SILTS AND CLAYS  (Liquid limit greater than 50)	MH		Inorganic Silts, Micaceous or Diatomaceous Fine Sandy or Silty Soils, Elastic Silts	
		CH		Inorganic Clays of High Plasticity Fat Clays	
		OH		Organic Clays of Medium to High Plasticity, Organic Silts	
HIGHLY ORGANIC SOILS			Pt		Peat and Other Highly Organic Soils



Sample retained for on-site screening.



Sample prepared for laboratory analysis.



Water Table Level.

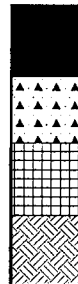
PID Photo-Ionization Detector readings (ppm).

ND Parameter Not Detected

NA Measurement Not Applicable, Groundwater Not Detected

- No Measurement Performed

NR No Sample Recovery



Asphaltic Concrete



Portland Cement Concrete



Cement Grout



Boulders or Bedrock

DRAFT  
FIGURE C.1

F:\FORMS\KEYLOG2

## KEY TO BORING LOG SYMBOLS

Duluth Air National Guard Base  
Duluth, Minnesota

OPTTECH  
OPERATIONAL TECHNOLOGIES  
CORPORATION

1994

DULUTH RFI

DULUTH, MINNESOTA, SITE 17

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## LOG OF BORING 017-10BH

Project No.:	1308-101	Sampling Method:	Stainless-Steel Split-Spoon Sampler
Logged By:	Kathryn Pritchett	Depth Drilled:	10.0 ft.
Drilling Co.:	Huntingdon Engineering and Environ.	Depth To Water:	4.5 BLS
Driller:	Jim Saugestad/Steve Sterk	Date Measured:	07/19/94
Date Drilled:	07/19/94	Surface Elevation:	1412.13 ft.
Drilling Method:	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
2 4 10 6		40			Silt, some peat, dark yellowish to grey brown, moist-dry.	-	-	-	-
2 5 6 100		70			Silt and peat, little clay, trace gravel, granule-sized clasts, medium grey brown to dark yellowish-brown, firm, soft, moist-wet.	0	0	ND	ND
					Silt, trace to little clay, little to some gravel, cobble-sized clasts, dark yellowish-brown, firm, soft, wet.				
43 23 29 25		75			Silt, trace to little sand, little to some gravel, trace clay, cobble-sized clasts, dark yellowish-brown, firm, wet.	0	0.3	ND	ND
10					Boring Terminated at 10 ft. - Borehole Abandoned by Procedures Stated in Work Plan.				



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## LOG OF BORING 017-11BH

Project No.:	1308-101	Sampling Method:	Stainless-Steel Split-Spoon Sampler
Logged By:	Kathryn Pritchett	Depth Drilled:	10.0 ft.
Drilling Co.:	Huntingdon Engineering and Environ.	Depth To Water:	5.0 BLS
Driller:	Jim Saugestad/Steve Sterk	Date Measured:	07/19/94
Date Drilled:	07/19/94	Surface Elevation:	1410.77 ft.
Drilling Method:	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
3 6 4 4			X		Silt, little sand, trace to little clay, little gravel, pebble-sized clasts, dark yellowish-brown, soft, moist-dry, roots.	0	0	25	ND
			X		Silt and peat, trace to little clay, medium-grey brown, soft, moist.				
1 3 3 6		60	X		Silt and peat, little clay, trace gravel, pebble-sized clasts, medium-grey to olive brown, soft, moist-wet.	0	0	ND	ND
			X						
2 6 4 4		75	X		Silt, some sand, little gravel, little clay, cobble-sized clasts, dark yellowish-brown, soft, wet.	0	0	ND	ND
10			X						
					Boring Terminated at 10 ft. - Borehole Abandoned by Procedures Stated in Work Plan.				






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## LOG OF BORING 017-12BH

<b>Project No.:</b>	1308-101	<b>Sampling Method:</b>	Stainless-Steel Split-Spoon Sampler
<b>Logged By:</b>	Kathryn Pritchett	<b>Depth Drilled:</b>	10.0 ft.
<b>Drilling Co.:</b>	Huntingdon Engineering and Environ.	<b>Depth To Water:</b>	4.5 BLS
<b>Driller:</b>	Jim Saugestad/Steve Sterk	<b>Date Measured:</b>	07/19/94
<b>Date Drilled:</b>	07/19/94	<b>Surface Elevation:</b>	1411.04 ft.
<b>Drilling Method:</b>	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
5 24 14 9		40			Silt, trace clay, little sand, little gravel, pebble-sized clasts, loose, moist-dry, roots, no odor.	0	0	21	ND
6 7 11 12		70			Silt and peat, little to some clay (olive color), medium grey to olive brown, soft, firm, moist-wet, wood fragments, no odor.	0	0	20	ND
					Silt and sand, little gravel, trace clay, pebble-sized clasts, dark yellowish to grey brown, firm, soft, wet, no odor.				
24 25 55 35		70			Sand and granule, some silt, little gravel, trace clay, pebble-sized clasts, dark yellowish-brown, loose, wet, no odor.	0	0	25	ND
10					Silt, trace clay, trace to little gravel, granule sized clasts, dark yellowish-brown, firm, wet-moist, no odor.				
Boring Terminated at 10 ft. - Borehole Abandoned by Procedures Stated in Work Plan.									

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## LOG OF BORING 017-13BH

Project No.:	1308-101	Sampling Method:	Stainless-Steel Split-Spoon Sampler
Logged By:	Kathryn Pritchett	Depth Drilled:	10.0 ft.
Drilling Co.:	Huntingdon Engineering and Environ.	Depth To Water:	7.0 BLS
Driller:	Jim Saugestad/Steve Sterk	Date Measured:	07/18/94
Date Drilled:	07/18/94	Surface Elevation:	1412.04 ft.
Drilling Method:	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
2 5 8 7		90			Silt, little sand, little gravel, cobble-sized clasts, dark yellowish-brown, moist-dry, roots.	-	-	ND	ND
3 5 5 7		80			Peat, some silt, medium to dark grey brown, soft, firm, moist-dry, wood fragments, no odor.	-	-	ND	ND
18 13 18 17		60			Silt, little to some sand, little gravel, cobble-sized clasts, dark yellowish-brown, firm, soft, wet, no odor.	-	-	ND	ND
10					Boring Terminated at 10 ft. - Borehole Abandoned by Procedures Stated in Work Plan.				

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## LOG OF BORING 017-14BH

<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Stainless-Steel Split-Spoon Sampler</b>
<b>Logged By:</b>	<b>Kathryn Pritchett</b>	<b>Depth Drilled:</b>	<b>10.0 ft.</b>
<b>Drilling Co.:</b>	<b>Huntingdon Engineering and Environ.</b>	<b>Depth To Water:</b>	<b>7.0 BLS</b>
<b>Driller:</b>	<b>Jim Saugestad/Steve Sterk</b>	<b>Date Measured:</b>	<b>07/19/94</b>
<b>Date Drilled:</b>	<b>07/19/94</b>	<b>Surface Elevation:</b>	<b>1411.79 ft.</b>
<b>Drilling Method:</b>	<b>Hollow-Stem Auger</b>		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
3 7 27 37		65			Silt, trace to little clay, little gravel, cobble-sized clasts, dark yellowish to grey brown, loose, moist-dry.	0	0	21	ND
2 3 4 6		85			Peat, little to some silt, trace clay, medium to dark grey brown, firm, soft, moist.	0	0	ND	ND
5 6 5 13		60			Silt, trace clay, some gravel, little to some sand, cobble-sized clasts, dark yellowish-brown, firm, wet.	0	0	22	ND
10					Boring Terminated at 10 ft. - Borehole Abandoned by Procedures Stated in Work Plan.				

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## LOG OF BORING 017-15BH

Project No.:	1308-101	Sampling Method:	Stainless-Steel Split-Spoon Sampler
Logged By:	Kathryn Pritchett	Depth Drilled:	10.0 ft.
Drilling Co.:	Huntingdon Engineering and Environ.	Depth To Water:	7.0 BLS
Driller:	Jim Saugestad/Steve Sterk	Date Measured:	07/18/94
Date Drilled:	07/18/94	Surface Elevation:	1411.49 ft.
Drilling Method:	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
2 10 60 24		70			Silt and sand, some gravel, cobble-sized clasts, dark yellowish to grey brown, loose, moist-dry, no odor.	0	0	ND	ND
3 3 3 5		45			Peat, some silt, little clay, dark grey brown, firm, soft, moist, no odor.	0	0	ND	ND
10 17 11 6		35			Silt, some sand, some gravel, cobble-sized clasts, dark yellowish-brown, firm, soft, wet, no odor.	0	-	ND	ND
10					Boring Terminated at 10 ft. - Borehole Abandoned by Procedures Stated in Work Plan.				

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




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## LOG OF BORING 017-16BH

Project No.:	1308-101	Sampling Method:	Stainless-Steel Split-Spoon Sampler
Logged By:	Kathryn Pritchett	Depth Drilled:	10.0 ft.
Drilling Co.:	Huntingdon Engineering and Environ.	Depth To Water:	7.0 BLS
Driller:	Jim Saugestad/Steve Sterk	Date Measured:	07/18/94
Date Drilled:	07/18/94	Surface Elevation:	1411.63 ft.
Drilling Method:	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
2 20 26 26		75	X		Silt, little clay, trace to little gravel, pebble-sized clasts, medium to dark yellowish-brown, firm, moist-dry, roots, no odor.	0	0	ND	ND
					Silt and peat, little sand, medium to dark grey-brown, loose, moist-dry.				
					Sand and silt, some granule, medium to dark grey-brown, loose, moist-dry, coal fragments.				
2 2 3 5		80	X		Peat, some silt, dark grey-brown, firm, soft, moist, wood fragments.	0	-	ND	ND
2 4 9 15		75	X		Sand and silt, little to some granule, medium grey-brown, firm, soft, wet, no odor.	0	0	ND	ND
10					Boring Terminated at 10 ft. - Borehole Abandoned by Procedures Stated in Work Plan.				

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## LOG OF BORING 017-17BH

Project No.:	1308-101	Sampling Method:	Stainless-Steel Split-Spoon Sampler
Logged By:	Kathryn Pritchett	Depth Drilled:	10.0 ft.
Drilling Co.:	Huntingdon Engineering and Environ.	Depth To Water:	7.0 BLS
Driller:	Jim Saugestad/Steve Sterk	Date Measured:	07/19/94
Date Drilled:	07/19/94	Surface Elevation:	1412.27 ft.
Drilling Method:	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
6 14 14 10		75			Silt, trace clay, little gravel, cobble-sized clasts, dark yellowish-brown, firm, moist-dry.	0	0.6	ND	ND
					Silt, little to some granule, little coal fragments, trace clay, dark yellowish-brown, firm, moist-dry.				
2 4 5 6		100			Peat, little silt, trace clay, medium to dark grey brown, firm, soft, moist, wood fragments.	0	1.0	ND	ND
1 2 2 3		100			Peat and silt, trace clay, trace gravel, pebble-sized clasts, light to dark grey to olive brown, soft, firm, wet.	0	0.8	19	ND
10					Boring Terminated at 10 ft. - Borehole Abandoned by Procedures Stated in Work Plan.				

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













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## LOG OF BORING 017-18BH

<b>Project No.:</b> 1308-101	<b>Sampling Method:</b> Stainless-Steel Split-Spoon Sampler
<b>Logged By:</b> Kathryn Pritchett	<b>Depth Drilled:</b> 10.0 ft.
<b>Drilling Co.:</b> Huntingdon Engineering and Environ.	<b>Depth To Water:</b> 1.0 BLS
<b>Driller:</b> Jim Saugestad/Steve Sterk	<b>Date Measured:</b> 07/20/94
<b>Date Drilled:</b> 07/20/94	<b>Surface Elevation:</b> 1412.95 ft.
<b>Drilling Method:</b> Hollow-Stem Auger	

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
6 12 32 12		70			Silt, trace clay, some sand, dark yellowish-brown, loose, moist-dry, roots.	0	1.0	ND	ND
					Silt, trace clay, little to some sand, some gravel, cobble-sized clasts, dark yellowish-brown, firm, wet.				
2 3 5 7		90			Peat, little to some silt, trace to little clay, medium to dark grey brown, soft, moist-wet, wood fragments.	0	0.9	ND	ND
					Peat, little to some silt, trace to little clay, medium to dark grey brown, soft, moist-wet, wood fragments.				
2 3 6 10		75			Silt and peat, little clay, trace granule, medium grey to olive brown, soft, wet.	0	0.8	ND	ND
					Silt, trace clay, trace to little sand, little to some gravel, pebble-sized clasts, dark yellowish-brown, firm, wet.				
10					Boring Terminated at 10 ft. - Borehole Abandoned by Procedure Stated in Work Plan.				



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## LOG OF BORING 017-19BH

<b>Project No.:</b> 1308-101	<b>Sampling Method:</b> Stainless-Steel Split-Spoon Sampler
<b>Logged By:</b> Kathryn Pritchett	<b>Depth Drilled:</b> 10.0 ft.
<b>Drilling Co.:</b> Huntingdon Engineering and Environ.	<b>Depth To Water:</b> 1.0 BLS
<b>Driller:</b> Jim Saugestad/Steve Sterk	<b>Date Measured:</b> 07/20/94
<b>Date Drilled:</b> 07/20/94	<b>Surface Elevation:</b> 1413.05 ft.
<b>Drilling Method:</b> Hollow-Stem Auger	

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
3 3 5 8		50			Silt, trace clay, trace sand, trace gravel, pebble-sized clasts, medium to dark yellowish to reddish-brown, loose, moist-dry, roots. Silt, some sand, little gravel, little granule, trace clay, pebble-sized clasts, dark yellowish to grey brown, soft, wet, slight petroleum odor.	25.1	0	ND	ND
2 3 7 10					Silt, little to some sand, little gravel, little granule, pebble-sized clasts, trace clay, dark yellowish to grey brown, soft, wet, slight petroleum odor. Silt, trace clay, trace to little gravel, cobble-sized clasts, dark yellowish-brown, firm, wet, no odor.	0	0	ND	ND
8 44 42 47					Silt, trace clay, little gravel, pebble-sized clasts, dark yellowish-brown, firm, wet.	0	0	ND	ND
10					Boring Terminated at 10 ft. - Borehole Abandoned by Procedures Stated in Work Plan. - Diesel Fuel Apparent in Drill Cuttings.				

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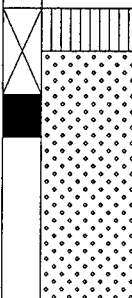
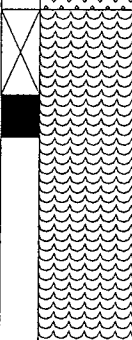
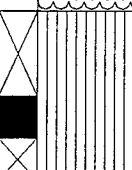
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## LOG OF BORING 017-20BH

<b>Project No.:</b> 1308-101	<b>Sampling Method:</b> Stainless-Steel Split-Spoon Sampler
<b>Logged By:</b> Kathryn Pritchett	<b>Depth Drilled:</b> 10.0 ft.
<b>Drilling Co.:</b> Huntingdon Engineering and Environ.	<b>Depth To Water:</b> 2.0 BLS
<b>Driller:</b> Jim Saugestad/Steve Sterk	<b>Date Measured:</b> 07/20/94
<b>Date Drilled:</b> 07/20/94	<b>Surface Elevation:</b> 1412.90 ft.
<b>Drilling Method:</b> Hollow-Stem Auger	



Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
3 7 5 9		75	X		Silt, trace clay, little to some sand, little gravel, pebble-sized clasts, dark yellowish-brown, loose, moist-dry, no odor, roots. Sand and granule, some silt, trace gravel, pebble-sized clasts, dark yellowish to grey brown, loose, moist, wet.	0	0	ND	ND
3 2 2 2		75	X		Peat, some silt, trace to little clay, medium to dark grey brown, firm, soft, wet.	0	0	ND	ND
5 12 19 27		70	X		Silt, trace clay, little gravel, trace sand, cobble-sized clasts, dark yellowish-brown, firm, wet.	0	0	ND	ND
10					Boring Terminated at 10 ft. - Borehole Abandoned by Procedures Stated in Work Plan.				

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## LOG OF BORING 017-21BH

<b>Project No.:</b>	<b>1308-101</b>
<b>Logged By:</b>	<b>Kathleen Merino</b>
<b>Drilling Co.:</b>	<b>American Engineering Testing</b>
<b>Driller:</b>	<b>J. Tuura</b>
<b>Date Drilled:</b>	<b>05/19/95</b>
<b>Drilling Method:</b>	<b>Hollow Stem Auger</b>

<b>Sampling Method:</b>	<b>Split-Spoon Sampler</b>
<b>Depth Drilled:</b>	<b>6.0 ft. BLS</b>
<b>Depth To Water:</b>	<b>NA</b>
<b>Date Measured:</b>	<b>NA</b>
<b>Surface Elevation:</b>	<b>1410.97 ft.</b>

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING				
						PID (ppm)	ATHA (ppm)	-	-	
0 5 10 15	1	55	X		Peat, moist black (10 yr 2/2).	0.0	-			
	2									
	2									
	2									
	1	50	X		Peat, little clay wet to slightly moist, gray to black.	0.0	0.0			
	1									
	1									
	6									
	Boring Terminated at 6.0 ft.									

# DULUTH, MINNESOTA, SITE 17

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<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Split-Spoon Sampler</b>
<b>Logged By:</b>	<b>Kathleen Merino</b>	<b>Depth Drilled:</b>	<b>6.0 ft.</b>
<b>Drilling Co.:</b>	<b>American Engineering Testing</b>	<b>Depth To Water:</b>	<b>3.0 ft. BLS</b>
<b>Driller:</b>	<b>J. Tuura</b>	<b>Date Measured:</b>	<b>05/17/95</b>
<b>Date Drilled:</b>	<b>05/17/95</b>	<b>Surface Elevation:</b>	<b>1412.26 ft.</b>
<b>Drilling Method:</b>	<b>Hollow Stem Auger</b>		

[illegible]

# DULUTH, MINNESOTA, SITE 17

# OPERATIONAL TECHNOLOGIES CORPORATION

<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Split-Spoon Sampler</b>
<b>Logged By:</b>	<b>Kathleen Merino</b>	<b>Depth Drilled:</b>	<b>6.0 ft.BLS</b>
<b>Drilling Co.:</b>	<b>American Engineering Testing</b>	<b>Depth To Water:</b>	<b>3.0 ft.BLS</b>
<b>Driller:</b>	<b>J. Tuura</b>	<b>Date Measured:</b>	<b>NA</b>
<b>Date Drilled:</b>	<b>05/17/95</b>	<b>Surface Elevation:</b>	<b>1412.97 ft.</b>
<b>Drilling Method:</b>	<b>Hollow Stem Auger</b>		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	-	-
0 - 6	6 6 2 2		X █  		Silt, little sand (medium to coarse), trace gravel (pebble), dry dark brown (7.5 yr 4/4).	0.0	0.0		
5 - 8	2 1 3 3		X █  		Silt, trace clay, trace gravel (pebble), moist, dark brown (7.5 yr 4/4).	0.0	0.0		
Boring Terminated at 6.0 ft.									

**DULUTH, MINNESOTA, SITE 17**

# OPERATIONAL TECHNOLOGIES CORPORATION

<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Split-Spoon Sampler</b>
<b>Logged By:</b>	<b>Kathleen Merino</b>	<b>Depth Drilled:</b>	<b>10.0 ft.</b>
<b>Drilling Co.:</b>	<b>American Engineering Testing</b>	<b>Depth To Water:</b>	<b>3.0 ft.BLS</b>
<b>Driller:</b>	<b>J. Tuura</b>	<b>Date Measured:</b>	<b>NA</b>
<b>Date Drilled:</b>	<b>05/17/95</b>	<b>Surface Elevation:</b>	<b>1411.22 ft.</b>
<b>Drilling Method:</b>	<b>Hollow Stem Auger</b>		

[illegible]

# DULUTH, MINNESOTA, SITE 17

**OPERATIONAL TECHNOLOGIES  
CORPORATION**

<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Split-Spoon Auger</b>
<b>Logged By:</b>	<b>Kathleen Merino</b>	<b>Depth Drilled:</b>	<b>6.0 ft.</b>
<b>Drilling Co.:</b>	<b>American Engineering Testing</b>	<b>Depth To Water:</b>	<b>3.0 ft.BLS</b>
<b>Driller:</b>	<b>J. Tuura</b>	<b>Date Measured:</b>	<b>05/17/95</b>
<b>Date Drilled:</b>	<b>05/17/95</b>	<b>Surface Elevation:</b>	<b>1411.56 ft.</b>
<b>Drilling Method:</b>	<b>Hollow Stem Auger</b>		

[illegible]

# DULUTH, MINNESOTA, SITE 17

**OPERATIONAL TECHNOLOGIES  
CORPORATION**

<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Split-Spoon Sampler</b>
<b>Logged By:</b>	<b>Kathleen Merino</b>	<b>Depth Drilled:</b>	<b>6.0 ft.</b>
<b>Drilling Co.:</b>	<b>American Engineering Testing</b>	<b>Depth To Water:</b>	<b>3.0 ft.BLS</b>
<b>Driller:</b>	<b>J. Tuura</b>	<b>Date Measured:</b>	<b>NA</b>
<b>Date Drilled:</b>	<b>05/17/95</b>	<b>Surface Elevation:</b>	<b>1412.66 ft.</b>
<b>Drilling Method:</b>	<b>Hollow Stem Auger</b>		

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**DULUTH, MINNESOTA, SITE 17**





**OPERATIONAL TECHNOLOGIES  
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<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Split-Spoon Sampler</b>
<b>Logged By:</b>	<b>Kathleen Merino</b>	<b>Depth Drilled:</b>	<b>2.5 ft.</b>
<b>Drilling Co.:</b>	<b>American Engineering Testing</b>	<b>Depth To Water:</b>	<b>3.0 ft.BLS</b>
<b>Driller:</b>	<b>J. Tuura</b>	<b>Date Measured:</b>	<b>NA</b>
<b>Date Drilled:</b>	<b>05/19/95</b>	<b>Surface Elevation:</b>	<b>1412.15 ft.</b>
<b>Drilling Method:</b>	<b>Hollow Stem Auger</b>		

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**O P T E C H**  
**OPERATIONAL TECHNOLOGIES**  
**CORPORATION**

<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Split-Spoon Sampler</b>
<b>Logged By:</b>	<b>Kathleen Merino</b>	<b>Depth Drilled:</b>	<b>6.0 ft.</b>
<b>Drilling Co.:</b>	<b>American Engineering Testing</b>	<b>Depth To Water:</b>	<b>3.0 ft.BLS</b>
<b>Driller:</b>	<b>J. Tuura</b>	<b>Date Measured:</b>	<b>NA</b>
<b>Date Drilled:</b>	<b>05/19/95</b>	<b>Surface Elevation:</b>	<b>1411.31 ft.</b>
<b>Drilling Method:</b>	<b>Hollow Stem Auger</b>		



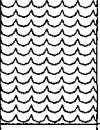
Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	-	-
5	7 23 9 3	45			Granular, moist, black fill material (10 yr 2/2).	0.0	0.0		
	2 1 1 1	50				Fill material, gravel (cobble) and silt, black (10 yr 2/2).	0.0		
	Boring Terminated at 6.0 ft.								

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DULUTH, MINNESOTA, SITE 17

**O P T E C H**  
OPERATIONAL TECHNOLOGIES  
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LOG OF BORING 017-31BH

<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Split-Spoon Sampler</b>
<b>Logged By:</b>	<b>Kathleen Merino</b>	<b>Depth Drilled:</b>	<b>6.0 ft.</b>
<b>Drilling Co.:</b>	<b>American Engineering Testing</b>	<b>Depth To Water:</b>	<b>3.0 ft. BLS</b>
<b>Driller:</b>	<b>J. Tuura</b>	<b>Date Measured:</b>	<b>NA</b>
<b>Date Drilled:</b>	<b>05/19/95</b>	<b>Surface Elevation:</b>	<b>1411.94 ft.</b>
<b>Drilling Method:</b>	<b>Hollow Stem Auger</b>		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	-	-
1 1 1 1		0			No Recovery.	-	-		
1 2 2 2		50	 		Peat, silt, trace sand (fine), moist, black (10 yr 2/2).	0.0	0.0		
Boring Terminated at 6.0 ft.									

# DULUTH, MINNESOTA, SITE 17

**OPERATIONAL TECHNOLOGIES  
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<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Split-Spoon Sampler</b>
<b>Logged By:</b>	<b>Kathleen Merino</b>	<b>Depth Drilled:</b>	<b>2.5 ft.</b>
<b>Drilling Co.:</b>	<b>American Engineering Testing</b>	<b>Depth To Water:</b>	<b>2.0 ft.BLS</b>
<b>Driller:</b>	<b>J. Tuura</b>	<b>Date Measured:</b>	<b>05/19/95</b>
<b>Date Drilled:</b>	<b>05/19/95</b>	<b>Surface Elevation:</b>	<b>1412.37 ft.</b>
<b>Drilling Method:</b>	<b>Hollow Stem Auger</b>		

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# DULUTH, MINNESOTA, SITE 18

**OPERATIONAL TECHNOLOGIES  
CORPORATION**

<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Stainless-Steel Hand Auger</b>
<b>Logged By:</b>	<b>Kathryn Pritchett</b>	<b>Depth Drilled:</b>	<b>2.5 ft. BLS</b>
<b>Drilling Co.:</b>	<b>Operational Technologies</b>	<b>Depth To Water:</b>	<b>NA</b>
<b>Driller:</b>	<b>Jeff Blunt</b>	<b>Date Measured:</b>	<b>NA</b>
<b>Date Drilled:</b>	<b>10/05/94</b>	<b>Surface Elevation:</b>	<b>1412.72 ft.</b>
<b>Drilling Method:</b>	<b>Hand Auger</b>		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
100	100	100	100	100	Silt, little clay, trace gravel, trace sand, fine-grained sand, cobble-sized clasts, dark brown (10yr 3/3), moist.	3.0	-	ND	ND
						3.0	-	ND	ND
Boring Terminated at 2.5 ft.									

LOG OF BORING 018-07BH

Project No.:	1308-101	Sampling Method:	Stainless-Steel Hand Auger
Logged By:	Kathryn Pritchett	Depth Drilled:	2.5 ft. BLS
Drilling Co.:	Operational Technologies	Depth To Water:	NA
Driller:	Jeff Blunt	Date Measured:	NA
Date Drilled:	10/05/94	Surface Elevation:	1412.78 ft.
Drilling Method:	Hand Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
		100	X		Silt, little sand, little to trace clay, trace gravel, fine-grained sand, cobble-sized clasts, dark brown (10 yr 3/3), moist, roots, slight petroleum odor.	14.0	-	-	-
		100	X			55.0	-	1,900	ND
		100	X			8.0	-	2,428	24
		100	X						
					Boring Terminated at 2.5 ft.				

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DULUTH, MINNESOTA, SITE 21

O P T E C H

OPERATIONAL TECHNOLOGIES  
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## LOG OF BORING 021-15BH

Project No.:	1308-101	Sampling Method:	Stainless-Steel Split-Spoon Sampler
Logged By:	Kathryn Pritchett	Depth Drilled:	14.0 ft.
Drilling Co.:	Huntingdon Engineering and Environ.	Depth To Water:	5.0 BLS
Driller:	Jim Saugestad/Steve Sterk	Date Measured:	07/14/94
Date Drilled:	07/14/94	Surface Elevation:	1406.34 ft.
Drilling Method:	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
16 20 11 11		70	X		Silt and sand, some gravel, mostly granule-sized clasts, pebble-sized clasts, dark yellowish-brown, loose, moist-dry, no odor.	0	0	ND	ND
5 3 8 12 16		80	X		Silt, trace clay, trace gravel granule-sized clasts, medium reddish to yellowish-brown, firm, soft, wet, no odor.	1.0	1.0	ND	ND
10 50 62 76 59		75	X		Silt, trace clay, some gravel, cobble-sized clasts, medium reddish to yellowish-brown, very firm, wet, no odor.	0.9	0	ND	ND
15 10 226		100	X		Silt, trace clay, some gravel, cobble-sized clasts, medium reddish to yellowish-brown, very firm, wet, no odor	0.6	0.5	ND	ND
Boring Terminated at 14 ft. - Refusal at 14 ft. BLS. - Borehole Abandoned by Procedures Stated in Work Plan.									

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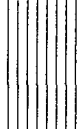




DULUTH, MINNESOTA, SITE 21

O P T E C H

OPERATIONAL TECHNOLOGIES  
CORPORATION

## LOG OF BORING 021-16BH

<b>Project No.:</b> 1308-101	<b>Sampling Method:</b> Stainless-Steel Split-Spoon Sampler
<b>Logged By:</b> Kathryn Pritchett	<b>Depth Drilled:</b> 15.0 ft.
<b>Drilling Co.:</b> Huntingdon Engineering and Environ.	<b>Depth To Water:</b> 8.0 BLS
<b>Driller:</b> Jim Saugestad/Steve Sterk	<b>Date Measured:</b> 07/14/94
<b>Date Drilled:</b> 07/14/94	<b>Surface Elevation:</b> 1401.14 ft.
<b>Drilling Method:</b> Hollow-Stem Auger	

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
15 23 23 13		50			Silt, some sand, little gravel, pebble-sized gravel, dark yellowish-brown, loose, moist-dry, no odor. Silt, trace to little sand, trace clay, little gravel, pebble-sized clasts, dark yellowish-brown, firm, moist-dry.	1.2	0.2	ND	ND
5 7 5 5 10		80			Silt, trace clay, trace sand, little gravel, pebble-sized clasts, decrease abundance of sand downward in section, dark yellowish-brown to medium yellowish, reddish-brown, firm, moist-dry.	1.1	1.5	ND	ND
10 7 16 22 23		70			Silt, trace clay, little to some gravel, cobble-sized clasts, medium to dark yellowish-brown, firm, wet.	1.5	0.9	ND	ND
15 10 17 20 27		55			Silt, trace clay, little to some gravel, cobble-sized clasts, medium to dark yellowish-brown, firm, wet.	0.9	-	-	-
Boring Terminated at 15 ft. - Borehole Abandoned by Procedures Stated in Work Plan.									



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DULUTH, MINNESOTA, SITE 21

O P T E C H

OPERATIONAL TECHNOLOGIES  
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## LOG OF BORING 021-17BH

Project No.:	1308-101	Sampling Method:	Stainless-Steel Split-Spoon Sampler
Logged By:	Kathryn Pritchett	Depth Drilled:	15.0 ft.
Drilling Co.:	Huntingdon Engineering and Environ.	Depth To Water:	8.0 BLS
Driller:	Jim Saugestad/Steve Sterk	Date Measured:	07/15/94
Date Drilled:	07/15/94	Surface Elevation:	1396.09 ft.
Drilling Method:	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
6 22 20 9		50	X		Silt, trace clay, trace gravel, dark yellowish-brown, loose, moist-dry.	0	0	ND	ND
5 6 18 22 37		80	X		Silt, little to some gravel, trace clay, cobble-sized clasts, medium reddish to yellowish-brown, firm, moist-dry, no odor.	0	0	ND	ND
10 12 20 26 35		95	X		Silt, little to some sand, little gravel, granule-sized clasts, medium reddish to yellowish-brown, firm, wet, no odor.	0	0.4	ND	ND
			X		Silt, little to some gravel, trace clay, cobble-sized clasts, medium reddish to yellowish-brown, firm, moist-dry, no odor.				
14 21 20 23		85	X		Silt, little to some sand, little gravel, granule-sized clasts, medium reddish to yellowish-brown, firm, wet, no odor	0.1	0.8	ND	ND
15			X		Sand and granule, trace gravel, pebble-sized clasts, dark yellowish to grey brown, loose, wet, no odor.				
			X		Silt, trace clay, little gravel, granule-sized clasts, medium reddish to yellowish-brown, firm, wet.				
Boring Terminated at 15 ft. - Borehole Abandoned by Procedures Stated in Work Plan.									

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DULUTH, MINNESOTA, SITE 21

O P T E C H

OPERATIONAL TECHNOLOGIES  
CORPORATION

## LOG OF BORING 021-18BH

Project No.:	1308-101	Sampling Method:	Stainless-Steel Split-Spoon Sampler
Logged By:	Kathryn Pritchett	Depth Drilled:	15.0 ft.
Drilling Co.:	Huntingdon Engineering and Environ.	Depth To Water:	5.0 BLS
Driller:	Jim Saugestad/Steve Sterk	Date Measured:	07/14/94
Date Drilled:	07/14/94	Surface Elevation:	1394.27 ft.
Drilling Method:	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
30 50 40 40		80	X		Sand and silt, little gravel, mostly granule-sized clasts, pebble-sized clasts, dark yellowish-brown, loose, soft, moist-dry, no odor.	1.5	3.1	ND	ND
			X		Silt, some sand, some gravel, cobble-sized clasts, dark yellowish-brown, firm, moist-dry, no odor.				
5 7 6 5 7		20	X		Poor Recovery	1.3	2.0	-	-
7 12 30 19		60	X		Silt, little to some gravel, trace to little clay, cobble-sized clasts, dark yellowish-brown, firm, wet, no odor.	1.4	-	ND	ND
13 20 23 21		85	X		Silt and sand, little to some gravel, trace clay, cobble-sized clasts, dark yellowish-brown, soft, wet.	1.3	-	ND	ND
15			X		Silt, little sand, trace clay, little to some gravel, cobble-sized clasts, dark yellowish-brown, firm, wet, no odor.				
Boring Terminated at 15 ft. - Borehole Abandoned by Procedures Stated in Work Plan.									

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DULUTH, MINNESOTA, SITE 17

O P T E C H

OPERATIONAL TECHNOLOGIES  
CORPORATION

## LOG OF BORING 021-19BH

Project No.:	1308-101	Sampling Method:	Stainless-Steel Split-Spoon Sampler
Logged By:	Kathryn Pritchett	Depth Drilled:	15.0 ft.
Drilling Co.:	Huntingdon Engineering and Environ.	Depth To Water:	4.0 BLS
Driller:	Jim Saugestad/Steve Sterk	Date Measured:	07/14/94
Date Drilled:	07/14/94	Surface Elevation:	1394.20 ft.
Drilling Method:	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
11 66 38		50			Sand and silt, little gravel, pebble to cobble-sized clasts, medium reddish to grey brown to dark yellowish-brown, loose, moist-dry, no odor.	1.6	1.4	ND	ND
5 4 7 6 9		75			Sand and silt, little gravel, pebble to cobble-sized clasts, dark yellowish-brown, wet, no odor.	1.7	1.6	ND	ND
					Peat and silt, little gravel, trace to little clay, cobble-sized clasts, medium to dark grey brown, firm, wet, no odor.				
10 13 23 30 36		100			Sand and silt, little gravel, pebble to cobble-sized clasts, medium reddish to grey brown to dark yellowish-brown, loose, moist-dry, no odor.	1.8	-	ND	ND
					Silt and clay, medium grey, soft, wet.				
					Sand and granule, some gravels, some silt, cobble-sized clasts, soft, wet, slight petroleum odor.				
15 22 18 20 25		100			Sand and silt, some granule, medium to dark yellowish-brown, soft, loose, wet.	1.6	3.9	7	7
					Sand and granule, some silt, medium to dark yellowish-brown, firm, soft, wet, slight petroleum odor.				
Boring Terminated at 15 ft. - Borehole Abandoned by Procedures Stated in Work Plan.									

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DULUTH, MINNESOTA, SITE 21

O P T E C H

OPERATIONAL TECHNOLOGIES  
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## LOG OF BORING 021-20BH

Project No.:	1308-101	Sampling Method:	Stainless-Steel Split-Spoon Sampler
Logged By:	Kathryn Pritchett	Depth Drilled:	15.0 ft.
Drilling Co.:	Huntingdon Engineering and Environ.	Depth To Water:	1.0 BLS
Driller:	Jim Saugestad/Steve Sterk	Date Measured:	07/13/94
Date Drilled:	07/13/94	Surface Elevation:	1395.63 ft.
Drilling Method:	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
3 4 5 8		60			Silt, trace clay, trace gravel, pebble-sized clasts, medium reddish to yellowish-brown, soft, moist-wet, no odor. Silt, some sand, trace to little gravel, pebble-sized clasts, medium reddish to yellowish-brown, firm, soft, wet, sand and granule lenses (1-2 inches thick), no odor.	1.7	5.3	ND	ND
5 3 5 3 3		75			Silt and sand, little organics (roots and wood fragments), medium reddish to yellowish-brown, soft, wet. Peat, trace silt, trace clay, medium to dark grey brown, loose, wet, wood fragments.	1.8	7.0	100	100
10 12 20 24 32		80			Silt, trace gravel, trace to little sand, trace clay, granule to pebble-sized clasts, firm, wet, no odor, sand and granule lenses.	1.8	7.0	ND	ND
10 18 14 17		55			Silt, little to some sand, trace to little gravel, trace clay, granule to pebble-sized clasts, medium reddish to yellowish-brown, soft, firm, wet.	1.5	-	-	-
15					Boring Terminated at 15 ft. - Boring Abandoned by Procedures Stated in Work Plan.				

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DULUTH, MINNESOTA, SITE 21

O P T E C H

OPERATIONAL TECHNOLOGIES  
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## LOG OF BORING 021-21BH


















Project No.:	1308-101	Sampling Method:	Stainless-Steel Split-Spoon Sampler
Logged By:	Kathryn Pritchett	Depth Drilled:	15.0 ft.
Drilling Co.:	Huntingdon Engineering and Environ.	Depth To Water:	4.0 BLS
Driller:	Jim Saugestad/Steve Sterk	Date Measured:	07/13/94
Date Drilled:	07/13/94	Surface Elevation:	1417.27 ft.
Drilling Method:	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
4 6 8 9		75	X		Silt, trace clay, trace gravel, granule to pebble-sized clasts, medium reddish to yellowish-brown, loose, dry, roots, no odor.	1.7	3.6	ND	ND
5 3 6 11 12		70	X		Silt, trace to little clay, trace to little gravel, granule to cobble-sized clasts, medium reddish to yellowish-brown, firm, wet, no odor .	1.9	5.9	ND	ND
10 12 22 22 24		80	X		Silt, trace to little clay, trace to little gravel, granule to cobble-sized clasts, medium reddish to yellowish-brown, firm, wet, no odor.	6.1	5.7	89	79
			X		Sand and granule, some silt, trace gravel, pebble-sized clasts, medium reddish to yellowish-brown, loose, soft, wet, no odor.				
15 21 37 44		85	X		Sand and silt, trace gravel pebble-sized clasts, medium reddish to yellowish-brown, firm, wet, no odor.	63.3	14.4	164	105
			X		Silt, trace clay, trace to little gravel, medium reddish to yellowish-brown, firm, wet.				
15					Boring Terminated at 15 ft. - Borehole Abandoned by Procedures Stated in Work Plan.				

# DULUTH, MINNESOTA, SITE 21

**OPERATIONAL TECHNOLOGIES  
CORPORATION**

<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Stainless-Steel Split-Spoon Sampler</b>
<b>Logged By:</b>	<b>Kathryn Pritchett</b>	<b>Depth Drilled:</b>	<b>15.0 ft.</b>
<b>Drilling Co.:</b>	<b>Huntingdon Engineering and Environ.</b>	<b>Depth To Water:</b>	<b>6.0 BLS</b>
<b>Driller:</b>	<b>Jim Saugestad/Steve Sterk</b>	<b>Date Measured:</b>	<b>07/12/94</b>
<b>Date Drilled:</b>	<b>07/12/94</b>	<b>Surface Elevation:</b>	<b>1417.47 ft.</b>
<b>Drilling Method:</b>	<b>Hollow-Stem Auger</b>		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
5	5 7 7 7	60	  		Silt, trace to little clay, little gravel, granule to cobble-sized clasts, dark reddish to yellowish-brown, loose, moist-dry, roots, rotten gabbro clasts, no odor.	0	10.3	ND	ND
5	3 6 10 25	55	  		Silt, trace clay, trace to little gravel, granule to pebble-sized clasts, gravel increases in abundance downward in section, medium to dark yellowish-brown, soft to loose, firm at lower interval, moist to wet.	21.3	472.0	902	395
10	12 60 45 41	75	  		Silt, trace clay, little to some gravel, granule to cobble-sized clasts, dark yellowish-brown, firm, wet, no odor. Silt, little to some sand, increases in abundance downward in section, little gravel, granule to pebble-sized clasts, dark yellowish-brown, wet, moist, no odor.	-	-	163	142
15	10 33 27 30	80	  	 	Silt and sand, fine-grained sand, trace clay, little to some gravel, increases in abundance downward in section, dark yellowish-brown, moist-dry. Silt, some sand, some gravel, granule to cobble-sized clasts, dark yellowish-brown, dry.	51.1	117.1	264	240
<p>Boring Terminated at 15 ft. - Perched Water From 6.0 ft. To 11.5 ft. BLS.</p>									

DULUTH RFI

DULUTH, MINNESOTA, SITE 21

O P T E C H

OPERATIONAL TECHNOLOGIES  
CORPORATION

## LOG OF BORING 021-23BH

Project No.:	1308-101	Sampling Method:	Stainless-Steel Split-Spoon Sampler
Logged By:	Kathryn Pritchett	Depth Drilled:	15.0 ft.
Drilling Co.:	Huntingdon Engineering and Environ.	Depth To Water:	NA
Driller:	Jim Saugestad/Steve Sterk	Date Measured:	NA
Date Drilled:	07/12/94	Surface Elevation:	1417.36 ft.
Drilling Method:	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
7 9 9 8		70	X X X		Silt, trace to little clay, little to some gravel, granule to cobble-sized clasts, soft, loose, dry-moist, no odor.	1.8	18.2	73	73
5									
10 22 24 27 17		95	X X X		Silt, trace to little clay, little to some gravel, granule to cobble-sized clasts, firm, dry, wet (11.0 - 11.5 perched).	47.3	366.0	1,289	1,110
9 12 11 18		80	X X X		Silt and sand, medium to dark yellowish-brown, loose, dry, at 14.5 BLS to 2 inch lense, silt with little clay, roots and gravel.	107.0	318.0	103	103
15					Boring Terminated at 15 ft. - Perched water at 11.0-11.5 ft. - Borehole Abandoned by Procedures Stated in Work Plan.				

## LOG OF BORING 021-24BH

<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Stainless-Steel Split-Spoon Sampler</b>
<b>Logged By:</b>	<b>Kathryn Pritchett</b>	<b>Depth Drilled:</b>	<b>17.0 ft.</b>
<b>Drilling Co.:</b>	<b>Huntingdon Engineering and Environ.</b>	<b>Depth To Water:</b>	<b>10.0 ft. BLS</b>
<b>Driller:</b>	<b>Jim Saugestad/Steve Sterk</b>	<b>Date Measured:</b>	<b>07/13/94</b>
<b>Date Drilled:</b>	<b>07/13/94</b>	<b>Surface Elevation:</b>	<b>1403.73 ft.</b>
<b>Drilling Method:</b>	<b>Hollow-Stem Auger</b>		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
8		70			Silt, trace clay, trace gravel, granule to pebble-sized clasts, medium to dark yellowish-brown, loose, moist, roots.	2.2	7.0	ND	ND
10					Silt, trace to little clay, trace to little gravel, pebble sized clasts, medium to dark yellowish-brown, firm, dry-moist.				
12									
10									
5	16	55			Silt, trace to little clay, trace to little gravel, cobble-sized clasts, medium to dark yellowish-brown, firm, moist.	2.2	6.0	ND	ND
	24								
	106				Sand and silt, trace gravel, loose, moist.				
	100				Silt, trace to little clay, trace to little gravel, cobble-sized clasts, medium to dark yellowish-brown, firm, moist.				
10	17	75			Silt, trace clay, little gravel, pebble-sized clasts, medium grey brown, firm, moist-dry, roots, no odor.	16.5	50.4	7,052	6,130
	14				Silt, some sand, trace gravel, pebble-sized clasts, dark yellowish-brown, wet, strong petroleum odor.				
	10								
	8								
	4	0				NR	NR	-	-
	14								
	15								
	21								
15	5	95			Silt, trace to little sand, trace gravel, pebble-sized clasts, medium reddish to yellowish-brown, firm, wet, no odor.	41.4	20.4	-	-
	16								
	20								
	21								
					Boring Terminated at 15 ft. - Borehole Abandoned by Procedures Stated in Work Plan.				



DULUTH RFI

DULUTH, MINNESOTA, SITE 21

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## LOG OF BORING 021-25BH

Project No.:	1308-101	Sampling Method:	Stainless-Steel Split-Spoon Sampler
Logged By:	Kathryn Pritchett	Depth Drilled:	15.0 ft.
Drilling Co.:	Huntingdon Engineering and Environ.	Depth To Water:	12.0 ft. BLS
Driller:	Jim Saugestad/Steve Sterk	Date Measured:	07/12/94
Date Drilled:	07/12/94	Surface Elevation:	1413.95 ft.
Drilling Method:	Hollow-Stem Auger		

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING			
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)
2 5 11 15		75	X X X		Silt, little to some gravel, granule to cobble-sized clasts, medium to dark yellowish-brown, loose, dry, no odor, roots.	0	13.5	88	82
5									
16 20 21 14		80	X X X		Silt, trace to little clay, little to some gravel, granule to cobble-sized clasts, dark yellowish-brown, loose, dry, moist at very end, roots, no odor.	3.6	17.1	ND	ND
3 7 8 16		90	X X X		Silt, little clay, little to some gravel, granule to cobble-sized clasts, dark-reddish to yellowish-brown, firm, wet, rotten gabbro clasts, no odor.	1.1	15.6	58	58
15					Boring Terminated at 15 ft. - Borehole Abandoned by Procedures Stated in Work Plan.				

**DULUTH, MINNESOTA, SITE 21**

**OPERATIONAL TECHNOLOGIES  
CORPORATION**

## LOG OF BORING 021-26BH

<b>Project No.:</b>	<b>1308-101</b>
<b>Logged By:</b>	<b>Kathleen Merino</b>
<b>Drilling Co.:</b>	<b>American Engineering Testing</b>
<b>Driller:</b>	<b>J. Tuura</b>
<b>Date Drilled:</b>	<b>05/16/95</b>
<b>Drilling Method:</b>	<b>Hollow Stem Auger</b>

<b>Sampling Method:</b>	<b>Split-Spoon Sampler</b>
<b>Depth Drilled:</b>	<b>10.0 ft.</b>
<b>Depth To Water:</b>	<b>NA</b>
<b>Date Measured:</b>	<b>NA</b>
<b>Surface Elevation:</b>	<b>1396.95 ft.</b>

[illegible]

**DULUTH, MINNESOTA, SITE 21**

**OPERATIONAL TECHNOLOGIES  
CORPORATION**

<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Split-Spoon Sampler</b>
<b>Logged By:</b>	<b>Kathleen Merino</b>	<b>Depth Drilled:</b>	<b>10.0 ft.</b>
<b>Drilling Co.:</b>	<b>American Engineering Testing</b>	<b>Depth To Water:</b>	<b>NA</b>
<b>Driller:</b>	<b>J. Tuura</b>	<b>Date Measured:</b>	<b>NA</b>
<b>Date Drilled:</b>	<b>05/16/95</b>	<b>Surface Elevation:</b>	<b>1394.81 ft.</b>
<b>Drilling Method:</b>	<b>Hollow Stem Auger</b>		

[illegible]

**DULUTH, MINNESOTA, SITE 21**

**OPERATIONAL TECHNOLOGIES  
CORPORATION**

<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Split-Spoon Sampler</b>
<b>Logged By:</b>	<b>Kathleen Merino</b>	<b>Depth Drilled:</b>	<b>6.0 ft.</b>
<b>Drilling Co.:</b>	<b>American Engineering Testing</b>	<b>Depth To Water:</b>	<b>NA</b>
<b>Driller:</b>	<b>J. Tuura</b>	<b>Date Measured:</b>	<b>NA</b>
<b>Date Drilled:</b>	<b>05/16/95</b>	<b>Surface Elevation:</b>	<b>1393.22 ft.</b>
<b>Drilling Method:</b>	<b>Hollow Stem Auger</b>		

[illegible]

**DULUTH RFI**

**DULUTH, MINNESOTA, SITE 21**

**O P T E C H**

**OPERATIONAL TECHNOLOGIES  
CORPORATION**

**LOG OF BORING 021-26MW**

<b>Project No.:</b>	<b>1308-101</b>	<b>Sampling Method:</b>	<b>Stainless-Steel Split-Spoon Sampler</b>
<b>Logged By:</b>	<b>Kathryn Pritchett</b>	<b>Depth Drilled:</b>	<b>19.0 ft.</b>
<b>Drilling Co.:</b>	<b>Huntingdon Engineering and Environ.</b>	<b>Depth To Water:</b>	<b>6.5 ft. BLS</b>
<b>Driller:</b>	<b>Jim Saugestad/Steve Sterk</b>	<b>Date Measured:</b>	<b>07/15/94</b>
<b>Date Drilled:</b>	<b>07/15/94</b>	<b>Surface Elevation:</b>	<b>1393.37 ft.</b>
<b>Drilling Method:</b>	<b>Hollow-Stem Auger</b>	<b>TOC Elevation:</b>	<b>1396.10 ft.</b>

Depth (ft.)	Blows/6"	% Recovery	Samples	Graphic	DESCRIPTION OF MATERIALS	FIELD SCREENING				Monitoring Well
						PID (ppm)	ATHA (ppm)	BTEX (ppb)	Benzene (ppb)	
6 4 4 4		40	X		Silt and sand, some gravel, dark yellowish to grey brown, loose, dry, no odor.	0	4.0	ND	ND	
4 11 7 8		10	X			NR	NR	-	-	
1 2 3 4		40	X		Peat, some silt, medium to dark grey brown, wet, no odor.	0	0	ND	ND	
3 6 9 12		65	X		Silt, little gravel, pebble-sized clasts, medium reddish to yellowish-brown, firm, soft, wet.	0	0	ND	ND	
5 11 18 15		100	X		Silt, little gravel, cobble-sized clasts, medium reddish to yellowish-brown, firm, soft, wet.	0	0	ND	ND	
20					Boring Terminated at 19 ft. - Monitor Well was Constructed upon Drilling Borehole.					

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**APPENDIX D**  
**MONITOR WELL CONSTRUCTION RECORD**

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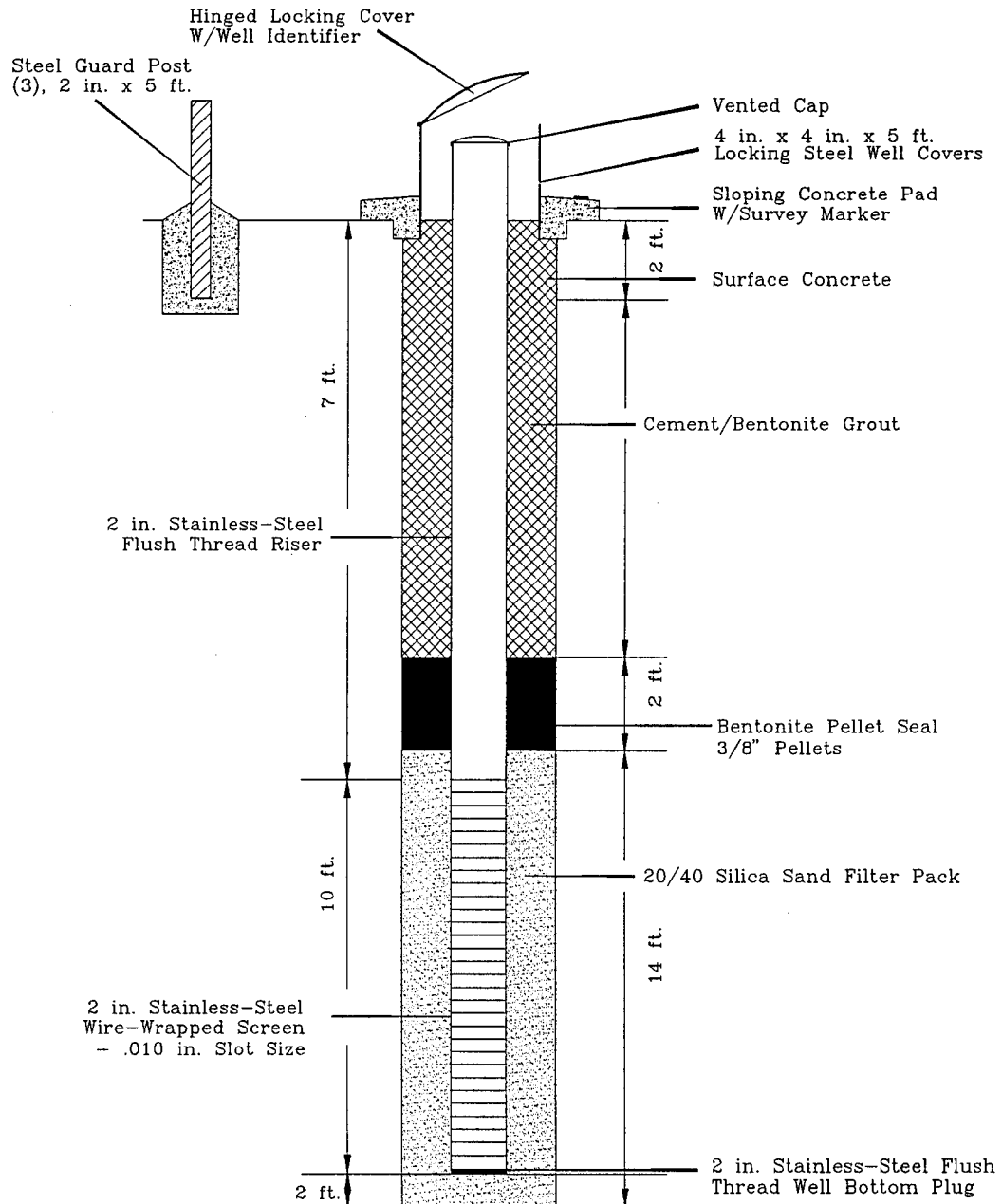
## **SECTION D.1 INTRODUCTION**

The monitor well for Site 21 was constructed as specified in Addendum 1 to RCRA Facility Investigation. The monitor well construction diagram displays the water-level data and well construction information for the well. Monitor well construction information includes an outline of the monitor well and contains the depth of the borehole, the screened interval, and the sand packed and bentonite interval.

Also included in this appendix is a copy of the well record for the Minnesota Department of Health.

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Project:	Duluth RFI	Date Installed:	07/14/94
Town/City:	Duluth	Drilling Contractor:	Huntingdon Engin. and Environmental
State:	Minnesota	Drilling Method:	Hollow-Stem Auger
TOC Elev:	1396.10 ft.	Borehole Diameter:	6.25 in.
Ground Elev.:	1393.37 ft.	Development Technique:	Stainless-Steel Split-Spoon Sampler
Water Level:	6.5 ft. TOC		
Total Well Depth:	19.0 ft.		Not To Scale



MONITOR-WELL CONSTRUCTION LOG  
 Well No. 021-26MW  
 Minnesota Boring No. MW 920-120

OPT ECH  
 OPERATIONAL TECHNOLOGIES  
 CORPORATION  
 OCTOBER 1994 DULUTH MONLOG

WELL LOCATION

County Name  
ST. LOUIS

Minnesota Statutes Chapter 1031

MINNESOTA UNIQUE WELL NO.  
547861

Township Name  
Herman

Township No.  
50

Range No.  
14

Section No.  
6

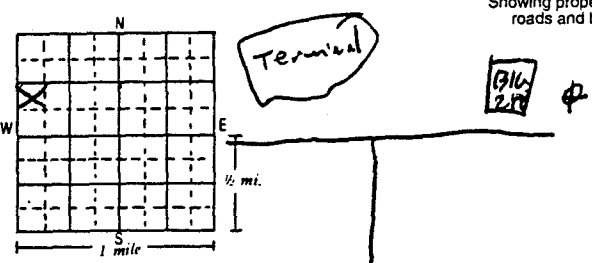
Fraction  
NE 1/4 SW 1/4 NW 1/4

WELL DEPTH (completed)  
17 ft

Date Work Completed  
7-15-94

Numerical Street Address and City of Well Location  
Duluth Int. Airport

Drilling Method  
☐ Cable Tool  
☐ Auger  
☐ Driven  
☒ Rotary  
☐ Dug  
☐ Jetted

Show exact location of well in section grid with "X".  


Drilling Fluid  
NONE

PROPERTY OWNER'S NAME  
Minnesota Air National Guard, Duluth

USE  
☐ Domestic  
☐ Irrigation  
☐ Test Well  
☒ Monitoring  
☐ Public  
☐ Dewatering  
☐ Heating/Cooling  
☐ Industry/Commercial  
☐ Remedial

CASING  
☒ Steel  
☐ Plastic  
Drive Shoe? ☐ Yes ☒ No  
☒ Threaded  
☐ Welded

HOLE DIAM.  
12 in. to 17 in.

SCREEN  
Make Johnson  
Type Stainless  
Slot/Gauze 10  
Set between 7 ft. and 17 ft. FITTINGS: M&E

OPEN HOLE  
from 0 ft. to 17 ft.  
Diam. 2"  
Length 10"  
Date measured 7-15-94

STATIC WATER LEVEL  
5 ft. below land surface

PUMPING LEVEL (below land surface)  
N/A ft. after 0 hrs. pumping 0 g.p.m.

WELL HEAD COMPLETION  
☐ Pitless adapter manufacturer N/A Model  
☐ Casing Protection 12 in. above grade

GROUTING INFORMATION  
Well grouted? ☒ Yes ☐ No  
Grout Material ☒ Neat cement ☐ Bentonite  
from 0 to 3 ft. 2 yds. 0 bags  
from 3 to 17 ft. 0 yds. 0 bags

NEAREST KNOWN SOURCE OF CONTAMINATION  
N/A feet direction type  
Well disinfected upon completion? ☐ Yes ☒ No

PUMP  
☒ Not installed Date installed  
Manufacturer's name  
Model number HP Volts  
Length of drop pipe ft. Capacity g.p.m.  
Pressure Tank Capacity  
Type: ☐ Submersible ☐ L.S. Turbine ☐ Reciprocating ☐ Jet

ABANDONED WELLS  
Does property have any not in use and not sealed well(s)? ☐ Yes ☒ No

WELL CONTRACTOR CERTIFICATION  
This well was drilled under my supervision and in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is true to the best of my knowledge.

REMARKS, ELEVATION, SOURCE OF DATA, etc.

Licensee Business Name  
Authorized Representative Signature  
JAMES SAUGSTAD  
Lic. or Reg. No.  
Date  
7-28-94

# PIEZOMETER FIELD DATA SHEET

JOB NO. 8400-94-107

PIEZOMETER NO. \_\_\_\_\_

(Indicate if in separate borehole)

CREW CHIEF J. Saugestad

BORING NO. MW 920 120

GROUND ELEVATION AND DATUM \_\_\_\_\_

Diagram labels and data:

- VENTED CAP
- PROTECTIVE CASING
  - Diameter and Type: 4" CASING
  - Total Length: 5.0
  - Length Above Ground: 3.1
- THICKNESS AND TYPE OF SEAL: Grout
- DIAMETER AND TYPE OF RISER PIPE: 2" Stainless
- TYPE OF BACKFILL AROUND RISER: Grout
- THICKNESS AND TYPE OF SEAL: Pellets 2'
- DEPTH TO TOP OF FILTER SAND: 5'
- TYPE OF PIEZOMETER: Stainless
  - Galvanized Carbon Steel
  - PVC
  - Other (State)
- DIAMETER AND LENGTH OF SCREEN: 2" x 10'
- SCREEN GAUGE OR SIZE OF OPENINGS (SLOT NO.): .010
- TYPE OF FILTER AROUND SCREEN: Density
- DEPTH TO BOTTOM OF PIEZOMETER: 17.0
- DEPTH TO BOTTOM OF FILTER SAND: 19.0
- THICKNESS AND TYPE OF SEAL: None
- DIAMETER OF BOREHOLE: 6 1/4 ID

Dimensions from diagram:

- 3' RISER PIPE ABOVE GROUND
- 10' TOTAL RISER PIPE
- 19' DEPTH OF BORING
- 10' PIEZOMETER

Operation Started: Date 7-15-94 Time 11:20  
 Operation Complete: Date 7-15-94 Time 14:50

Drilling Method: \_\_\_\_\_  
 Drilling Fluid: \_\_\_\_\_  
 Water from \_\_\_\_\_ to \_\_\_\_\_  
 Bentonite from \_\_\_\_\_ to \_\_\_\_\_  
 Revert from \_\_\_\_\_ to \_\_\_\_\_

## PIEZOMETER WATER LEVEL MEASUREMENTS

Date	Time	Bailed Depths	Water Level
		to	
		to	
		to	
		to	
		to	

REMARKS:

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**APPENDIX E**  
**WELL DEVELOPMENT LOG**

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## **SECTION E.1 INTRODUCTION**

This appendix contains the well development log for the monitor well installed during the Addendum 1 RCRA Facility Investigation for Site No. 21 at the Minnesota Air National Guard Base, Duluth, Minnesota. The well development log and a photograph of purged water are included.

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**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL DEVELOPMENT LOG**

Monitor Well: 021-026MW

Development Start: (Date) 7/20/94 (Time) 07:30

Development End : (Date) 7/20/94 (Time) 09:25

Developed By : Huntingdon Engineering and Environmental

PID Reading : (Background) 0 ppm (Reading) 0 ppm

Depth to Water (BTOC): 7.92' Depth to Bottom of Well (BTOC): 20.23'

Volume of Water in the Well:

$$V_{(gal)} = [0.0408] \times [\text{Well Diameter (inches)}]^2 \times [\text{Height of Water in Well (feet)}]$$

$$[0.0408] \times [2"]^2 \times [12.31']$$

$$V_{(gal)} = 2$$

$$V_{(gal)} \times 3 = 6$$

Development Method : 2" PVC Bailer Containment : Plastic-lined, steel, 55-gal drum

Average Rate of Removal of Water : ~0.5 gal/min.

Weather : Sunny, mid 60's

Comments : Bailer was decontaminated as required by Work Plan. Purged dry.

Time	Amount of Water Removed (gallons)	Temperature (°F)	pH	Conductivity (μS/cm)	Clarity
08:07	6	64.3	5.66	596	cloudy
08:12	8	62.8	5.94	640	cloudy
08:19	10	63.4	6.14	696	cloudy
08:23	12	65.4	6.32	764	cloudy
08:30	14	65.8	6.45	636	cloudy
08:35	16	65.2	6.69	570	cloudy
08:40	18	62.9	6.78	486	cloudy
08:43	20	55.7	6.86	635	cloudy
08:48	22	54.1	7.01	587	cloudy
08:55	24	55.2	7.14	712	cloudy
09:04	25	55.4	7.13	870	cloudy
09:07	26	55.4	7.11	862	slightly cloudy
09:12	27	55.1	7.14	863	slightly cloudy



Photography of water purged from monitor well  
021-026MW on 20 July 1994.

**APPENDIX F**  
**WELL PURGING AND SAMPLING LOGS**

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## **SECTION F.1**

### **INTRODUCTION**

This appendix contains the well purging and well sampling logs of the Addendum 1 RCRA Facility Investigation for Site No. 21 at the Minnesota Air National Guard Base, Duluth, Minnesota. A summary of the well purging logs and well sampling logs follow.

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**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL PURGING LOG**

Monitor Well No.: 021-009MW

Purge Start: (Date) 7/22/94 (Time) 08:00

Purge End: (Date) 7/22/94 (Time) 08:30

Purged By: Kathryn Pritchett, Joe Byrd, Jr., and Ruben Torres

Background PID Reading: 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 10.84' Depth to Bottom of Well (BTOC): 19.92'

Volume of Water in Well (gallons) =  $(0.0408) \times (\text{well diameter (inches)})^2 \times \text{height of water column (feet)}$

$$V = (0.0408) \times (2") \times (9.08') = 1.5 \text{ gallons}$$

$$\text{Volume of Water in Well} \times 3 = 4.5 \text{ gallons}$$

Purge method: 2" PVC Bailer

Purge Water Containment: Plastic-lined, steel, 55-gallon drum

Average Rate of Removal of Water: ~0.3 gal./min.

Weather: Cloudy, 60's

Comments: Bailer was decontaminated as required by Work Plan. Purged dry.

Time	Amount of Water Removed (gallons)	Temperature (°F)	pH	Conductivity (μS/cm)	Clarity
8:20	4.5	55.8	6.60	1481	Cloudy
8:25	6.5	54.2	6.58	1496	Cloudy
8:27	7	54.2	6.53	1481	Cloudy

**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL PURGING LOG**

Monitor Well No.: 021-009MW

Purge Start: (Date) 10/06/94 (Time) 09:45

Purge End: (Date) 10/06/94 (Time) 10:22

Purged By: Kathryn Pritchett and Jeff Blunt

Background PID Reading: 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 11.52' Depth to Bottom of Well (BTOC): 19.89'

Volume of Water in Well (gallons) =  $(0.0408) \times (\text{well diameter (inches)})^2 \times \text{height of water column (feet)}$

$$V = (0.0408) \times (2") \times (8.37') = 1.4 \text{ gallons}$$

$$\text{Volume of Water in Well} \times 3 = 4.1 \text{ gallons}$$

Purge method: 2" Teflon™ Bailer

Purge Water Containment: Plastic-lined, steel, 55-gallon drum

Average Rate of Removal of Water: ~0.2 gal./min.

Weather: Cloudy, 50's, 40% chance of rain

Comments: Bailer was decontaminated as required by Work Plan. Purged dry.

Time	Amount of Water Removed (gallons)	Temperature (°C)	pH	Conductivity (μS/cm)	Clarity
10:02	4	13.0	6.51	896	Cloudy
10:12	5.5	12.0	6.52	698	Slightly cloudy
10:17	6.5	12.0	6.60	821	Cloudy
10:22	7	12.0	6.65	825	Cloudy

**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL PURGING LOG**

Monitor Well No.: 021-010MW

Purge Start: (Date) 7/22/94 (Time) 10:00

Purge End: (Date) 7/22/94 (Time) 10:40

Purged By: Kathryn Pritchett, Joe Byrd, Jr., and Ruben Torres

Background PID Reading: 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 6.86' Depth to Bottom of Well (BTOC): 17.56'

Volume of Water in Well (gallons) =  $(0.0408) \times (\text{well diameter (inches)})^2 \times \text{height of water column (feet)}$

$$V = (0.0408) \times (2") \times (10.70') = 1.7 \text{ gallons}$$

$$\text{Volume of Water in Well} \times 3 = 5.2 \text{ gallons}$$

Purge method: 2" PVC Bailer

Purge Water Containment: Plastic-lined, steel, 55-gallon drum

Average Rate of Removal of Water: ~0.3 gal./min.

Weather: Cloudy, 60's

Comments: Bailer was decontaminated as required by Work Plan. Purged dry.

Time	Amount of Water Removed (gallons)	Temperature (°F)	pH	Conductivity (μS/cm)	Clarity
10:20	5	60.2	5.89	734	Cloudy
10:25	6.5	59.4	6.18	721	Cloudy
10:28	8	56.7	6.35	681	Cloudy
10:35	8.5	55.1	6.43	670	Cloudy
10:37	8.5	55.1	6.71	683	Cloudy

**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL PURGING LOG**

Monitor Well No.: 021-010MW

Purge Start: (Date) 10/06/94 (Time) 13:20

Purge End: (Date) 10/06/94 (Time) 14:10

Purged By: Kathryn Pritchett and Jeff Blunt

Background PID Reading: 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC)L: 6.79' Depth to Bottom of Well (BTOC): 17.71'

Volume of Water in Well (gallons) =  $(0.0408) \times (\text{well diameter (inches)})^2 \times \text{height of water column (feet)}$

$$V = (0.0408) \times (2") \times (10.92') = 1.8 \text{ gallons}$$

$$\text{Volume of Water in Well} \times 3 = 5.3 \text{ gallons}$$

Purge method: 2" Teflon™ Bailer

Purge Water Containment: Plastic-lined, steel, 55-gallon drum

Average Rate of Removal of Water: ~0.3 gal./min.

Weather: Cloudy, 50's, 40% chance of rain

Comments: Bailer was decontaminated as required by Work Plan. Purged dry.

Time	Amount of Water Removed (gallons)	Temperature (°C)	pH	Conductivity (μS/cm)	Clarity
13:45	5	14.5	6.65	1046	Clear - grey - black
13:51	6.5	14.0	6.71	1002	grey
13:55	8	13.5	6.81	906	Clear - grey tint
14:00	9.5	13.5	7.06	788	Clear - brown tint
14:05	11	13.0	7.15	778	Clear - brown
14:10	12	13.5	7.15	790	Cloudy

**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL PURGING LOG**

Monitor Well No.: 021-014MW

Purge Start: (Date) 7/22/94 (Time) 15:35

Purge End: (Date) 7/22/94 (Time) 16:11

Purged By: Kathryn Pritchett, Joe Byrd, Jr., and Ruben Torres

Background PID Reading: 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 4.87' Depth to Bottom of Well (BTOC): 14.88'

Volume of Water in Well (gallons) =  $(0.0408) \times (\text{well diameter (inches)})^2 \times \text{height of water column (feet)}$

$$V = (0.0408) \times (2") \times (10.01') = 1.6 \text{ gallons}$$

$$\text{Volume of Water in Well} \times 3 = 4.9 \text{ gallons}$$

Purge method: 2" PVC Bailer

Purge Water Containment: Plastic-lined, steel, 55-gallon drum

Average Rate of Removal of Water: ~0.7 gal./min.

Weather: Cloudy, 60's

Comments: Bailer was decontaminated as required by Work Plan. Purged dry.

Time	Amount of Water Removed (gallons)	Temperature (°F)	pH	Conductivity (μS/cm)	Clarity
15:50	6	63.6	6.68	1654	Cloudy
15:53	8	59.6	6.83	1673	Cloudy
15:56	10	59.3	7.06	1731	Cloudy
16:00	13	59.2	7.31	1721	Cloudy
16:04	15	59.0	7.29	1711	Cloudy
16:07	17	59.3	7.38	1711	Cloudy

**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL PURGING LOG**

Monitor Well No.: 021-014MW

Purge Start: (Date) 10/06/94 (Time) 10:30

Purge End: (Date) 10/06/94 (Time) 11:45

Purged By: Kathryn Pritchett and Jeff Blunt

Background PID Reading: 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 4.83' Depth to Bottom of Well (BTOC): 14.79'

Volume of Water in Well (gallons) =  $(0.0408) \times (\text{well diameter (inches)})^2 \times \text{height of water column (feet)}$

$$V = (0.0408) \times (2") \times (9.96') = 1.6 \text{ gallons}$$

$$\text{Volume of Water in Well} \times 3 = 4.9 \text{ gallons}$$

Purge method: 2" Teflon™ Bailer

Purge Water Containment: Plastic-lined, steel, 55-gallon drum

Average Rate of Removal of Water: ~0.4 gal./min.

Weather: Cloudy, 50's, 40% chance of rain

Comments: Bailer was decontaminated as required by Work Plan.

Time	Amount of Water Removed (gallons)	Temperature (°C)	pH	Conductivity (μS/cm)	Clarity
11:20	5	13.0	6.54	1481	Slightly cloudy
11:24	6.5	13.0	6.56	1844	cloudy
11:28	8	13.0	6.58	1807	cloudy
11:32	9.5	13.0	6.58	1719	cloudy
11:38	11	13.0	6.61	1652	cloudy
11:42	12.5	13.0	6.63	1654	cloudy
11:45	14	13.0	6.68	1645	cloudy

**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL PURGING LOG**

Monitor Well No.: 021-026MW

Purge Start: (Date) 7/22/94 (Time) 11:25

Purge End: (Date) 7/22/94 (Time) 13:10

Purged By: Kathryn Pritchett, Joe Byrd, Jr., and Ruben Torres

Background PID Reading: 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 8.21' Depth to Bottom of Well (BTOC): 20.22'

Volume of Water in Well (gallons) =  $(0.0408) \times (\text{well diameter (inches)})^2 \times \text{height of water column (feet)}$

$$V = (0.0408) \times (2") \times (12.01') = 2.0 \text{ gallons}$$

$$\text{Volume of Water in Well} \times 3 = 6 \text{ gallons}$$

Purge method: 2" PVC Bailer

Purge Water Containment: Plastic-lined, steel, 55-gallon drum

Average Rate of Removal of Water: ~0.6 gal./min.

Weather: Cloudy, 60's

Comments: Bailer was decontaminated as required by Work Plan.

Time	Amount of Water Removed (gallons)	Temperature (°F)	pH	Conductivity (µS/cm)	Clarity
11:50	6	62.4	7.31	703	Cloudy
11:55	8	62.4	7.31	751	Cloudy
12:00	10	62.5	7.03	861	Cloudy
12:04	12	61.1	6.99	905	Cloudy
12:08	14	61.2	7.00	967	Cloudy
12:14	16	62.5	6.99	1103	Cloudy
12:20	18	61.9	6.82	1129	Cloudy
12:25	20	61.5	6.79	1130	Cloudy
12:29	22	61.5	6.77	1193	Cloudy
12:32	24	60.9	6.73	1271	Cloudy
12:39	26	60.4	6.73	1254	Cloudy
12:41	28	59.8	6.98	908	Cloudy
12:45	30	58.1	7.11	835	Cloudy
12:50	32	57.4	7.33	669	Cloudy
12:55	34	55.7	7.70	624	Cloudy
13:01	36	55.2	7.81	684	Cloudy
13:07	38	56.4	7.85	722	Cloudy
13:10	40	58.4	7.60	777	Cloudy

**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL PURGING LOG**

Monitor Well No.: 021-026MW

Purge Start: (Date) 10/06/94 (Time) 14:15

Purge End: (Date) 10/06/94 (Time) 15:24

Purged By: Kathryn Pritchett and Jeff Blunt

Background PID Reading: 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 7.65' Depth to Bottom of Well (BTOC): 20.38'

Volume of Water in Well (gallons) =  $(0.0408) \times (\text{well diameter (inches)})^2 \times \text{height of water column (feet)}$

$$V = (0.0408) \times (2'') \times (12.73') = 2.1 \text{ gallons}$$

$$\text{Volume of Water in Well} \times 3 = 6.2 \text{ gallons}$$

Purge method: 2" Teflon™ Bailer

Purge Water Containment: Plastic-lined, steel, 55-gallon drum

Average Rate of Removal of Water: ~0.4 gal./min.

Weather: Cloudy, 50's, 40% chance of rain

Comments: Bailer was decontaminated as required by Work Plan.

Time	Amount of Water Removed (gallons)	Temperature (°C)	pH	Conductivity (µS/cm)	Clarity
15:00	6	14.0	7.47	637	Slightly cloudy
15:04	8	13.5	7.48	697	Slightly cloudy
15:08	10	13.0	7.47	590	Slightly cloudy
15:12	12	13.0	7.55	544	Slightly cloudy
15:19	14	12.5	7.62	535	Slightly cloudy
15:24	16	12.5	7.63	538	Slightly cloudy



**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL SAMPLING LOG**

Monitor Well No.: 021-009MW

Sample Start: (Date) 7/22/94 (Time) 09:30

Sample End: (Date) 7/22/94 (Time) 09:50

Sampled By: Kathryn Pritchett, Joe Byrd, Jr., and Ruben Torres

Background PID Reading: 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 10.84'

Screen Interval: 10.41' - 20.41' BTOC

Sampling method: 2" Teflon™ Bailer

Sampling Equipment Decontamination method: Bailer was decontaminated as required by Work Plan.

Lab Analyses: (3) 40-ml vials VOC (SW 8240) preserved with HCL  
(1) 500-ml Poly Metals (SW 6010/7000) preserved with HNO<sub>3</sub>

QA/QC Samples: Equipment rinseate blank 021-RB04  
Field blank - 021-FB01  
Analyses same as 021-009MW-GW01

Weather: Cloudy, 60's

Comments:

Time	Temperature (°F)	pH	Conductivity (μS/cm)	Clarity
9:30	57.6	5.83	1330	Cloudy

**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL SAMPLING LOG**

Monitor Well No.: 021-009MW

Sample Start: (Date) 10/06/94 (Time) 10:40

Sample End: (Date) 10/06/94 (Time) 10:50

Sampled By: Kathryn Pritchett and Jeff Blunt

Background PID Reading : 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 11.52'

Screen Interval: 10.41' - 20.41' BTOC

Sampling method: 2" Teflon™ Bailer

Sampling Equipment Decontamination method: Bailer was decontaminated as required by Work Plan.

Lab Analyses: (3) 40-ml vials VOC (SW 8240) preserved with HCL  
021-009MW-GW02

QA/QC Samples: Equipment rinseate blank sample of the 2" Teflon™ bailer - 021-RB08  
Analyses same as 021-009MW-GW02

Weather: Cloudy, 50's, 40% chance of rain

Comments:

Time	Temperature (°C)	pH	Conductivity ( $\mu$ S/cm)	Clarity
10:40	12.5	6.65	869	cloudy

**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL SAMPLING LOG**

Monitor Well No.: 021-010MW

Sample Start: (Date) 7/22/94 (Time) 10:55

Sample End: (Date) 7/22/94 (Time) 11:15

Sampled By: Kathryn Pritchett, Joe Byrd, Jr., and Ruben Torres

Background PID Reading : 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 6.86'

Screen Interval: 7.66' - 17.66' BTOC

Sampling method: 2" Teflon™ Bailer

Sampling Equipment Decontamination method: Bailer was decontaminated as required by Work Plan.

Lab Analyses: (3) 40-ml vials VOC (SW 8240) preserved with HCL  
(1) 500-ml Poly Metals (SW 6010/7000) preserved with HNO<sub>3</sub>

QA/QC Samples: Duplicate - 021-010AMW-GW01  
Equipment rinseate blank - 021-RB04  
Analyses - same as 021-010MW-GW01

Weather: Cloudy, 60's

Comments:

Time	Temperature (°F)	pH	Conductivity (μS/cm)	Clarity
11:15	61.4	6.76	783	slightly cloudy

**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL SAMPLING LOG**

Monitor Well No.: 021-010MW

Sample Start: (Date) 10/06/94 (Time) 14:25

Sample End: (Date) 10/06/94 (Time) 14:35

Sampled By: Kathryn Pritchett and Jeff Blunt

Background PID Reading : 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 6.79'

Screen Interval: 7.66' - 17.66' BTOC

Sampling method: 2" Teflon™ Bailer

Sampling Equipment Decontamination method: Bailer was decontaminated as required by Work Plan.

Lab Analyses: (3) 40-ml vials VOC (SW 8240) preserved with HCL  
021-010MW-GW02

QA/QC Samples: Duplicate sample was collected - 021-010AMW-GW02  
Equipment rinseate blank sample of the 2" Teflon™ bailer - 021-RB08  
Analyses same as 021-010MW-GW02

Weather: Cloudy, 50's, 40% chance of rain

Comments:

Time	Temperature (°C)	pH	Conductivity (μS/cm)	Clarity
14:30	14.5	7.15	976	slightly cloudy

**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL SAMPLING LOG**

Monitor Well No.: 021-014MW

Sample Start: (Date) 7/22/94 (Time) 16:15

Sample End: (Date) 7/22/94 (Time) 16:25

Sampled By: Kathryn Pritchett, Joe Byrd, Jr., and Ruben Torres

Background PID Reading : 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 4.87'

Screen Interval: 5.46' - 15.46' BTOC

Sampling method: 2" Teflon™ Bailer

Sampling Equipment Decontamination method: Bailer was decontaminated as required by Work Plan.

Lab Analyses: (3) 40-ml vials VOC (SW 8240) preserved with HCL  
(1) 500-ml Poly Metals (SW 6010/7000) preserved with HCL

QA/QC Samples: Equipment rinseate blank - 021-RB04  
Field blank - 021-FB01  
Analyses same as 021-014MW-GW01

Weather: Cloudy, 60's

Comments:

Time	Temperature (°F)	pH	Conductivity (μS/cm)	Clarity
15:30	-	-	-	-

**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL SAMPLING LOG**

Monitor Well No.: 021-014MW

Sample Start: (Date) 10/06/94 (Time) 11:55

Sample End: (Date) 10/06/94 (Time) 12:00

Sampled By: Kathryn Pritchett and Jeff Blunt

Background PID Reading : 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 4.83'

Screen Interval: 5.46' - 15.46 BTOC

Sampling method: 2" Teflon™ Bailer

Sampling Equipment Decontamination method: Bailer was decontaminated as required by Work Plan.

Lab Analyses: (3) 40-ml vials VOC (SW 8240) preserved with HCL  
021-014MW-GW02

QA/QC Samples: Equipment rinseate blank sample of the 2" Teflon™ bailer - 021-RB08  
Analyses same as 021-014MW-GW02

Weather: Cloudy, 50's, 40% chance of rain

Comments:

Time	Temperature (°C)	pH	Conductivity (μS/cm)	Clarity
11:55	13.0	6.71	1335	Slightly cloudy

**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL SAMPLING LOG**

Monitor Well No.: 021-026MW

Sample Start: (Date) 7/22/94 (Time) 14:45

Sample End: (Date) 7/22/94 (Time) 15:15

Sampled By: Kathryn Pritchett and Jeff Blunt

Background PID Reading : 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 8.21'

Screen Interval: 9.73' - 19.73' BTOC

Sampling method: 2" Teflon™ Bailer

Sampling Equipment Decontamination method: Bailer was decontaminated as required by Work Plan.

Lab Analyses: (3) 40-ml vials VOC (SW 8240) preserved with HCL  
(1) 500-ml Poly Metals (SW 6010/7000) preserved with HCL

QA/QC Samples: Equipment rinseate blank - 021-RB04  
Analyses same as 021-026MW-GW01

Weather: Cloudy, 60's

Comments:

Time	Temperature (°F)	pH	Conductivity (μS/cm)	Clarity
15:15	63.2	7.02	967	slightly cloudy

**DULUTH AIR NATIONAL GUARD BASE RFI**  
**DAHA90-91-D-0002/01 (1308-101-139)**

**WELL SAMPLING LOG**

Monitor Well No.: 021-026MW

Sample Start: (Date) 10/06/94 (Time) 15:30

Sample End: (Date) 10/06/94 (Time) 15:40

Sampled By: Kathryn Pritchett and Jeff Blunt

Background PID Reading : 0 ppm PID Reading: 0 ppm

Depth to Water (BTOC): 7.65'

Screen Interval: 9.73' - 19.73' BTOC

Sampling method: 2" Teflon™ Bailer

Sampling Equipment Decontamination method: Bailer was decontaminated as required by Work Plan.

Lab Analyses: (3) 40-ml vials VOC (SW 8240) preserved with HCL

QA/QC Samples: Equipment rinseate blank - 021-RB08  
(3) 40-ml vials VOC (SW 8240)

Weather: Cloudy, 50's, 40% chance of rain

Comments:

Time	Temperature (°C)	pH	Conductivity (μS/cm)	Clarity
15:30	13.0	7.65	641	Slightly cloudy



**APPENDIX G**

**FIELD GAS CHROMATOGRAPH ANALYSIS RESULTS**

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## **SECTION G.1 INTRODUCTION**

This appendix describes the field gas chromatography (GC) analysis results of the Addendum RCRA Facility Investigation for Sites No. 17, 18, and 21 at the Minnesota Air National Guard Base, Duluth, Minnesota. A PHOTOVAC 10S50 portable gas chromatograph was used for field analysis. A summary of the GC results are presented in Table G.1 followed by the raw data.

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**Table G.1**  
**GC Screening Results**  
**148th FG, Duluth ANGB, Duluth, Minnesota**

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Volatile Concentrations (ppb)				Total BTEX (ppb)
			Benzene	Toluene	Ethylbenzene	Xylenes	
100 PPB BTEX	STANDARD	NA	100	100	300		500
021-025BH	1.5-2.0	10	82	6	ND	ND	88
021-025BH	10.0-11.0	10	ND	ND	ND	ND	ND
021-025BH Reshot	10.0-11.0	10	ND	ND	ND	ND	ND
021-025BH	14.5-15.0	12	58	ND	ND	ND	58
021-023BH	1.5-2.0	12	73	ND	ND	ND	73
1. PPM BTEX	STANDARD	NA	1,000	1,000	1,000		3,000
021-023BH	10.5-11.0	12	1,110	118	61		1,289
021-022BH Reshot	6.0-6.5	10	395	287	220		902
021-024BH	16.5-17.0	12	1,070	ND	ND		1,070
021-022BH	11.5-12.0	10	142	10	11		163
1 PPM BTEX	STANDARD	NA	1,080	976	2,710		4,766
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
021-022BH	14.5-15.0	10	240	12	12		264
021-021BH Reshot	14.5-15.0	12	105	ND	59		164
021-023BH	14.5-15.0	10	103	ND	ND		103
021-024BH	10.5-11.0	14	6,130	146	776		7,052
1 PPM BTEX	STANDARD	NA	1,000	1,000	3,000		5,000
AIR BLANK	NA	NA	ND	ND	ND		ND
021-024BH <sup>a</sup>	10.5-11.0	14	1,080	86	382		1,548
1 PPM BTEX	STANDARD	NA	1,130	1,110	3,400		5,640

**Table G.1 (Continued)**  
**GC Screening Results**  
**148th FG, Duluth ANGB, Duluth, Minnesota**

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Volatile Concentrations (ppb)				Total BTEX (ppb)
			Benzene	Toluene	Ethylbenzene	Xylenes	
100 PPB BTEX	STANDARD	NA	100	100	100	200	500
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
021-024BH	2.0-2.5	10	ND	ND	ND	ND	ND
021-021BH	2.0-2.5	10	ND	ND	ND	ND	ND
021-020BH	10.5-11.0	10	ND	ND	ND	ND	ND
021-021BH	6.5-7.0	10	ND	ND	ND	ND	ND
021-024BH	6.5-7.0	10	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	100	100	200	500
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
021-024BH	6.5-7.0	10	ND	ND	ND	ND	ND
021-021BH	11.5-12.0	10	79	10	ND	ND	89
021-022BH	1.0-1.5	10	ND	ND	ND	ND	ND
021-020BH	6.5-7.0	12	100	ND	ND	ND	100
021-020BH	1.5-2.0	12	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	97	105	203	505
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
021-018BH	2.0-2.5	10	ND	ND	ND	ND	ND
021-018BH	13.5-14.0	12	ND	ND	ND	ND	ND
021-018BH	9.5-10.0	12	ND	ND	ND	ND	ND
021-019BH	14.5-15.0	10	7	ND	ND	ND	7
021-019BH	1.5-2.0	12	ND	ND	ND	ND	ND

Table G.1 (Continued)  
GC Screening Results  
148th FG, Duluth ANGB, Duluth, Minnesota

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Volatile Concentrations (ppb)				Total BTEX (ppb)
			Benzene	Toluene	Ethylbenzene	Xylenes	
100 PPB BTEX	STANDARD	NA	100	84	83	187	454
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
021-016BH	2.0-2.5	12	ND	ND	ND	ND	ND
021-016BH	6.5-7.0	10	ND	ND	ND	ND	ND
021-016BH	10.5-11.0	10	ND	ND	ND	ND	ND
021-019BH	6.5-7.0	10	ND	ND	ND	ND	ND
021-019BH	10.5-11.0	12	16	ND	ND	ND	16
100 PPB BTEX	STANDARD	NA	100	100	100	200	500
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
021-015BH	1.5-2.0	10	ND	ND	ND	ND	ND
021-015BH	6.5-7.0	10	ND	ND	ND	ND	ND
021-015BH	10.5-11.0	12	ND	ND	ND	ND	ND
021-015BH	13.0-13.5	10	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	93	81	157	431
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	100	100	200	500
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
021-017BH	2.0-2.5	12	ND	ND	ND	ND	ND
021-017BH	5.5-6.0	10	ND	ND	ND	ND	ND
021-017BH	10.5-11.0	12	ND	ND	ND	ND	ND
021-017BH	14.5-15.0	12	ND	ND	ND	ND	ND

**Table G.1 (Continued)**  
**GC Screening Results**  
**148th FG, Duluth ANGB, Duluth, Minnesota**

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Volatile Concentrations (ppb)				Total BTEX (ppb)
			Benzene	Toluene	Ethylbenzene	Xylenes	
100 PPB BTEX	NA	NA	100	107	113	217	537
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
021-026MW	2.0-2.5	10	ND	ND	ND	ND	ND
021-026MW	8.5-9.0	10	ND	ND	ND	ND	ND
021-026MW	11.0-11.5	12	ND	ND	ND	ND	ND
021-026MW	16.5-17.0	10	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	101	105	194	500
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	100	100	200	500
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
017-016BH	1.5-2.0	12	ND	ND	ND	ND	ND
017-016BH	5.5-6.0	12	ND	ND	ND	ND	ND
017-016BH	9.5-10.0	16	ND	ND	ND	ND	ND
017-015BH	1.0-1.5	12	ND	ND	ND	ND	ND
017-015BH	5.5-6.0	12	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	100	100	200	500
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
017-015BH	5.5-6.0	12	ND	ND	ND	ND	ND
017-015BH	9.0-9.5	12	ND	ND	ND	ND	ND
017-013BH	5.5-6.0	10	ND	ND	ND	ND	ND
017-013BH	2.0-2.5	12	ND	ND	ND	ND	ND



**Table G.1 (Continued)**  
**GC Screening Results**  
**148th FG, Duluth ANGB, Duluth, Minnesota**

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Volatile Concentrations (ppb)				Total BTEX (ppb)
			Benzene	Toluene	Ethylbenzene	Xylenes	
017-013BH	9.5-10.0	12	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	93	84	170	447
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	100	100	200	500
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
017-014BH	2.0-2.5	12	ND	21	ND	ND	21
017-014BH	4.5-5.0	10	ND	ND	ND	ND	ND
017-014BH	9.5-10.0	12	ND	22	ND	ND	22
017-012BH	2.0-2.5	12	ND	21	ND	ND	21
017-012BH	5.5-6.0	12	ND	20	ND	ND	20
100 PPB BTEX	STANDARD	NA	100	92	95	180	467
AIR BLANK	NA	NA	ND	26	ND	ND	26
017-012BH	9.5-10.0	14	ND	25	ND	ND	25
017-011BH	2.0-2.5	10	ND	25	ND	ND	25
017-011BH	5.5-6.0	10	ND	ND	ND	ND	ND
017-011BH	9.5-10.0	10	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	100	100	200	500
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
017-010BH	4.5-5.0	12	ND	ND	ND	ND	ND
017-010BH	9.5-10.0	12	ND	ND	ND	ND	ND
017-017BH	1.5-2.0	10	ND	ND	ND	ND	ND

**Table G.1 (Continued)**  
**GC Screening Results**  
**148th FG, Duluth ANGB, Duluth, Minnesota**

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Volatile Concentrations (ppb)				Total BTEX (ppb)
			Benzene	Toluene	Ethylbenzene	Xylenes	
017-017BH	5.5-6.0	10	ND	ND	ND	ND	ND
017-017BH	9.5-10.0	10	ND	19	ND	ND	19
100 PPB BTEX	STANDARD	NA	100	105	90	177	472
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
017-018BH	2.0-2.5	10	ND	ND	ND	ND	ND
017-018BH	4.5-5.0	10	ND	ND	ND	ND	ND
017-018BH	9.5-10.0	12	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	100	100	200	500
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
017-019BH	1.5-2.0	12	ND	ND	ND	ND	ND
017-019BH	5.0-6.0	10	ND	ND	ND	ND	ND
017-019BH	9.5-10.0	10	ND	ND	ND	ND	ND
017-020BH	2.0-2.5	12	ND	ND	ND	ND	ND
017-020BH	5.5-6.0	10	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	101	92	180	473
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
017-020BH	9.5-10.0	12	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	99	87	169	455
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	100	100	200	500
AIR BLANK	NA	NA	ND	ND	ND	ND	ND

**Table G.1 (Continued)**  
**GC Screening Results**  
**148th FG, Duluth ANGB, Duluth, Minnesota**

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Volatile Concentrations (ppb)				Total BTEX (ppb)
			Benzene	Toluene	Ethylbenzene	Xylenes	
021-009MW	GROUNDWATER	10 ml	ND	ND	ND	ND	ND
021-010MW	GROUNDWATER	10 ml	ND	ND	ND	ND	ND
021-014MW	GROUNDWATER	10 ml	ND	ND	ND	ND	ND
021-026MW	GROUNDWATER	10 ml	ND	ND	ND	ND	ND
018-006BH	2.5	10	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	100	100	200	500
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
018-006BH	1.7	10	ND	ND	ND	ND	ND
017-010BH	1.5-2.5	10	ND	ND	ND	ND	ND
018-007BH	2.5	10	ND	ND	ND	ND	ND
100 PPB BTEX	STANDARD	NA	100	100	100	200	500
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
021-004SD	SURFACE SEDIMENT	10	ND	ND	ND	ND	ND
021-005SD	SURFACE SEDIMENT	10	ND	ND	ND	ND	ND
021-006SD	SURFACE SEDIMENT	10	ND	ND	ND	ND	ND
021-007SD	SURFACE SEDIMENT	12	ND	ND	ND	ND	ND
018-007BH	0.8-1.3	10	ND	7	215	1,224	1,446
1 PPM BTEX	STANDARD	NA	1,000	1,000	1,000	2,000	5,000
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
018-007BH	0.8-1.3	10	ND	ND	66	ND	66
018-007BH	2.5	10	ND	3,550	3,220	4,090	10,860

**Table G.1 (Concluded)**  
**GC Screening Results-Soil**  
**148th FG, Duluth ANGB, Duluth, Minnesota**

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Volatile Concentrations (ppb)				Total BTEX (ppb)
			Benzene	Toluene	Ethylbenzene	Xylenes	
1 PPM BTEX	STANDARD	NA	1,000	999	951	1,910	4,860
018-007BH <sup>b</sup>	2.5	10	24	616	768	1,020	2,428
018-007BH	0.8-1.3	10	66	ND	ND	ND	66
018-007BH <sup>c</sup>	2.5	10	12	239	331	432	1,010
100 PPB BTEX	STANDARD	NA	100	100	100	200	500
AIR BLANK	NA	NA	ND	ND	ND	ND	ND
018-007BH	0.8-1.3	10	ND	10	295	1,590	1,900
018-007BH <sup>d</sup>	0.8-1.3	10	ND	ND	166	921	1,087
100 PPB BTEX	STANDARD	NA	100	96	94	283	573
AIR BLANK	NA	NA	ND	ND	ND	ND	ND

<sup>a</sup> - 4X dilution injection.  
<sup>b</sup> - 5X dilution injection.  
<sup>c</sup> - 10X dilution injection.  
<sup>d</sup> - 2X dilution injection.  
 PPM - parts per million.  
 GROUNDWATER - 10 ml groundwater sample.  
 SURFACE SEDIMENT - surface sediment sample.  
 BH - Borehole.  
 MW - Monitoring well.  
 NA - Not applicable.  
 ND - Non detect.  
 Reshot - 2nd injection of an interval's headspace.  
 PPB/ppb - Parts per billion.  
 BTEX - Benzene, Toluene, Ethylbenzene, and Xylenes.  
 ft. BLS - feet below land surface.  
 STANDARD - BTEX calibration standard.

# FIELD GC RESULTS

Duluth Air National Guard Base, Duluth, Minnesota

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Concentrations (ppb)					
			Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total BTEX
100 PPB BTEX	--	--	100	100	100	200	100	600
1 PPM BTEX	--	--	1,000	1,000	1,000	2,000	1,000	6,000
10 PPM BTEX	--	--	10,000	10,000	10,000	20,000	10,000	60,000
AIR BLANK	--	--	1	1	6	9	ND	17
021-026BH	8'-10'	10	1	3	ND	ND	ND	4
021-026BH	4'-6'	10	1	2	4	5	ND	12
100 PPB BTEX	--	--	106	103	98	188	68	563
100 PPB BTEX	--	--	100	100	100	200	100	600
1 PPM BTEX	--	--	1,000	1,000	1,000	2,000	1,000	6,000
10 PPM BTEX	--	--	10,000	10,000	10,000	20,000	10,000	60,000
AIR BLANK	--	--	1	12	ND	83	20	116
021-027BH	4'-6'	10	1	3	ND	31	11	56
021-027BH	8'-10'	10	ND	3	3	8	4	18
AIR BLANK	--	--	2	1	ND	ND	ND	3
021-028BH	0.5'-2.5'	10	ND	2	2	3	2	9
021-028BH	8'-10'	10	ND	1	2	3	3	9
100 PPB BTEX	--	--	97	70	62	119	51	399
100 PPB BTEX	--	--	96	92	87	178	93	546
RECAL	--	--	100	100	100	200	100	600
AIR BLANK	--	--	1	ND	ND	ND	ND	1
017-024BH	0.5'-2.5'	10	2	ND	13	ND	22	37
017-024BH	4'-6'	10	4	1	ND	44	ND	49
017-025BH	0.5'-2.5'	10	6	1	4	9	ND	20
017-024BH	8'-10'	10	7	ND	11	ND	3	21
017-025BH	4'-6'	10	6	1	4	ND	ND	11
100 PPB BTEX	--	--	96	81	64	115	108	464
RECAL	--	--	100	100	100	200	100	600

AIR BLANK	--	--	5	ND	4	ND	4	13
017-022BH	0.5'-2.5'	10	5	3	7	12	1	28
017-023BH	0.5'-2.5'	10	3	3	7	9	ND	22
017-023BH	4'-6'	10	10	3	37	98	ND	148
017-018BH	0.5'-2.5'	10	13	3	4	ND	ND	20
017-028BH	4'-6'	10	5	ND	8	ND	ND	13
100 PPB BTEX	--	--	2	91	96	138	31	358

BH - Borehole.

ml - milliliters.

PPB/ppb - Parts per billion.

ND - Non detect.

BTEX - Benzene, Toluene, Ethylbenzene, and Xylenes.

RECAL - Recalibration.

PPM - Parts per million.

ft. BLS - Feet Below Land Surface.

①

GC OVEN TEMP: 40°C  
ANALYSIS TIME: 400 s  
WINDOW: ±10%  
MINIMUM AREA: \_\_\_\_\_

DATE: 12 July 94

# FIELD GC DATA SUMMARY

SITE: DULUTH ANG B Site 21  
 GAIN: 100 JB 100 50 2<sup>nd</sup> 5  
 CARRIER GAS FLOW: 10.9  $\mu$ l/min

GC OVEN TEMP: 40°C  
 ANALYSIS TIME: 400 sec  
 WINDOW:  $\pm 10\%$   
 MINIMUM AREA: 50 mVs

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Sample Dilution Factor	Concentrations (ppb)						Additional Analytes		
				Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total BTEX			
100 ppb std		ABORT	RUN	GAIN	15	200	HIGH					
		Reset	GAIN	20	10							
DRY RUN												
100 ppb std		ABORT	RUN	GAIN	15	200	HIGH					
		Reset	GAIN	20	2							
DRY RUN	20	Purge										
100 ppb STD		Reset	GAIN	20	5							
100 ppb STD		no	Good	PEAKS								
100 ppb STD		"	"	"	"							
100 ppb STD		looks	better									
100 ppb std		"	"	INCREASE	ANALYSIS	Time	20	450s				
100 ppb std		"	"	"	"	"	"	1500s				
		INCREASE	AIR FLOW	20	12.8 $\mu$ l/min							
		Decrease	AT	20	400s							
100 ppb std		A	GOOD	PICTURE	INCREASE	AT	20	430				
100 ppb std		Finally.	Set	LIBRARY								
021-025 BH	1.5-2.0	10g	-	82	6	ND	ND	ND	88			
021-025 BH	10.0-11.0	10g	-	ND	ND	ND	ND	ND	ND			
	10.0-11.0	Reshoot	-	ND	ND	ND	ND	ND	ND			
021-025 BH	14.5-15.0	12g	-	58	ND	ND	ND	ND	58			
021-023 BH	1.5-2.0	12g	-	73	ND	ND	ND	ND	73			
100 ppb std	check		-	176	89	277			542	Recalibrate		
100 ppb std			-	Reset	GAIN	20						
100 ppb std			-	Reset	Library	All is good						

OPERATOR: Jon Byrd Jr

DATE: 13 July 1994



FIELD GC DATA SUMMARY

SITE: DULUTH ANGB, Site 21  
GAIN: 10, 2 for 1PPM  
CARRIER GAS FLOW: 13.8  $\mu$ l/min

GC OVEN TEMP: 40°C  
ANALYSIS TIME: 430 sec  
WINDOW: ±10%  
MINIMUM AREA: 50 ~~mV~~ 53 200 mV

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Sample Dilution Factor	Concentrations (ppb)						Additional Analytes		
				Benzene	Toluene	Ethyl-benzene	m,p-Xylene	o-Xylene	Total BTEX			
AIR BLANK			—	38	ND	ND	ND	ND	38			
20 ppb std			—	128	46	274	ND	ND	448	Reshoot		
2 ppb std			—	91	91	272			454			
1-023BH	10.5-11.0	12g	—	ND	290	98	ND	ND	388			
	HAD	SPIKES	off	CHART. Reset Gain to 5 and Area to 100								
0 ppb std			—	72	80	274	ND	ND	426			
				ERASE LIBRARY AND RECALIBRATE								
5 ppb std	AIR BLANK		—	22	ND	ND	ND	ND	22			
21-023BH	10.5-11.0	12g	—	647	333	137	ND	ND	1,120	Chang Standard		
PPM	AIR BLANK											
PPM				looks great Benzene @ 7.9 V <sub>s</sub> = 50 mV								
1-023BH	10.5-11.0	12g	—	1,110	118	61	ND	ND	1,289			
21-022BH	6.0-6.5	10g	—	315		Printer not working						
Reshoot			—	395	287	220	ND	ND	902			
21-024BH	16.5-17.0	12g	—	1,070	ND	ND	ND	ND	1,070			
1-022BH	11.5-12.0	10g	—	142	10	17	ND	ND	163			
<del>1-022BH</del>	<del>11.5-12.0</del>	<del>10g</del>	—	1,080	976	2,710	ND	ND	4,766			
AIR BLANK			—	ND	ND	ND	ND	ND	ND			
1-022BH	14.5-15.0	10g	—	240	12	12	ND	ND	264			
1-021BH	14.5-15.0	12g	—	Printer Mal Function								
Reshoot			—	105	ND	59	ND	ND	164			
21-023BH	14.5-15.0	10g	—	103	ND	ND	ND	ND	103			
1-024BH	10.5-11.0	14g	—	6,130	146	776	ND	ND	7,052			
1 PPM STD			—	845	674	2,010	ND	ND	3,529			

OPERATOR: Jan B. Galt

DATE: 13 July 94

## 2

GC OVEN TEMP: 40°C  
ANALYSIS TIME: 430 sec  
WINDOW: 10%  
MINIMUM AREA: 41, 42:20 mV

DATE: 13 July 94

# FIELD GC DATA SUMMARY

SITE: Duluth ANGB, Site 21  
 GAIN: 10  
 CARRIER GAS FLOW: 11  $\mu$ l/min

GC OVEN TEMP: 40°C  
 ANALYSIS TIME: 430 sec  
 WINDOW:  $\pm 10\%$   
 MINIMUM AREA: 50 mVs

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Sample Dilution Factor	Concentrations (ppb)						Additional Analytes		
				Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total BTEX			
50 ppb		Mixed	Shot									
by run												
50 ppb		GAIN is TOO HIGH	Reset to 5.									
		INCREASE	AIR Flow to 12 $\mu$ l/min									
50 ppb		looks good.	Set AREA to 50 mVs									
IR			—	ND	ND	ND	ND	ND	ND			
21-024 BH	2.0-2.5	10g	—	ND	ND	ND	ND	ND	ND			
1-021 BH	2.0-2.5	10g	—	ND	ND	ND	ND	ND	ND			
1-020 BH	10.5-11.0	10g	—	ND	ND	ND	ND	ND	ND			
1-021 BH	6.5-7.0	10g	—	ND	ND	ND	ND	ND	ND			
1-024 BH	6.5-7.0	10g	—	ND	ND	ND	ND	ND	ND			
ppb std			—	88	86	31	92	ND	297			
	RECAL			100	98	35	105	ND	338	Recalibrate needed		
ppb std												
IR			—	ND	ND	ND	ND	ND	ND			
1-024 BH	6.5-7.0	10g	—	ND	ND	ND	ND	ND	ND			
1-021 BH	11.5-12.0	10g	—	79	10	ND	ND	ND	89			
022 BH	1.0-1.5	10g	—	ND	ND	ND	ND	ND	ND			
020 BH	6.5-7.0	12g	—	100	ND	ND	ND	ND	100			
1-020 BH	1.5-2.0	12g	—	ND	ND	ND	ND	ND	ND			
ppb	—	—	—	89	87	94	181	ND	451			
	CAL			100	97	105	203	ND	505			
R BLANK	—	—	—	ND	ND	ND	ND	ND	ND			

RATOR: for 3 yr

DATE: 14 July 97

# FIELD GC DATA SUMMARY

SITE: Duluth ANGB, Site 21

GAIN: 5

CARRIER GAS FLOW: 12  $\mu$ l/min

GC OVEN TEMP: 40°C

ANALYSIS TIME: 430 sec

WINDOW:  $\pm 10\%$

MINIMUM AREA: 50 mV

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Sample Dilution Factor	Concentrations (ppb)						Additional Analytes		
				Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total BTEX			
021-018BH	2.0-2.5	10g	—	ND	ND	ND	ND	ND	ND			
021-018BH	13.5-14.0	12g	—	ND	ND	ND	ND	ND	ND			
021-018BH	9.5-10.0	12g	—	ND	ND	ND	ND	ND	ND			
021-019BH	14.5-15	10g	—	7	ND	ND	ND	ND	7			
021-019BH	1.5-2.0	12g	—	ND	ND	ND	ND	ND	ND			
100 ppb	STD	—	—	80	67	66	109	ND	322			
	CAL			100	84	83	187	ND	454			
AIR BLANK				ND	ND	ND	ND	ND	ND			
021-016 <sup>BH</sup>	2.0-2.5	12g	—	ND	ND	ND	ND	ND	ND			
021-016BH	6.5-7.0	10g	—	ND	ND	ND	ND	ND	ND			
021-016BH	10.5-11.0	10g	—	ND	ND	ND	ND	ND	ND			
021-019BH	6.5-7.0	10g	—	ND	ND	ND	ND	ND	ND			
021-019BH	10.5-11.0	12g	—	16	ND	ND	ND	ND	16			
100 ppb				127	106	102	164	ND	499			
	CAL			100	83	80	128	ND	391			
100 ppb	Recalibrate			—	—	—	—	—	—			
AIR BLANK				ND	ND	ND	ND	ND	ND			
021-015BH	1.5-2.0	10g	—	ND	ND	ND	ND	ND	ND			
021-015BH	6.5-7.0	10g	—	ND	ND	ND	ND	ND	ND			
021-015BH	10.5-11.0	12g	—	ND	ND	ND	ND	ND	ND			
021-015BH	13.0-13.5	10g	—	ND	ND	ND	ND	ND	ND			
100 ppb				85	79	68	133	ND	365			
	CAL			100	93	81	157	ND	431			
AIR BLANK				ND	ND	ND	ND	ND	ND			

OPERATOR: Jan Byrd Jr

DATE: 14 July 94

## FIELD GC DATA SUMMARY

SITE: DULUTH ANGB  
GAIN: 5  
CARRIER GAS FLOW: 12.3  $\mu$ l/min

GC OVEN TEMP: 40°C  
ANALYSIS TIME: 430 sec  
WINDOW: ±10%  
MINIMUM AREA: 50 mV

[illegible]

ERATOR: Jan Byrd Jr

DATE: 15 July 1994

# FIELD GC DATA SUMMARY

SITE: Duluth ANGR, Site 17  
 GAIN: 5, 10  
 CARRIER GAS FLOW: 13  $\mu$ l/min

GC OVEN TEMP: 40°C  
 ANALYSIS TIME: 430 sec  
 WINDOW:  $\pm 10\%$   
 MINIMUM AREA: 100 mV

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Sample Dilution Factor	Concentrations (ppb)						Additional Analytes		
				Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total BTEX			
100 ppb STD												
		Increase gain to 10										
100 ppb STD				2.2 V <sub>s</sub>	$\Rightarrow$ 100 mV <sub>s</sub> setting							
AIR BLANK				ND	ND	ND	ND	ND	ND			
METHANOL				ND	ND	ND	ND	ND	ND			
017-016BH	1.5-2.0	12g	—	ND	ND	ND	ND	ND	ND			
017-016BH	5.5-6.0	12g	—	ND	ND	ND	ND	ND	ND			
017-016BH	9.5-10.0	16g	—	ND	ND	ND	ND	ND	ND			
017-015BH	1.0-1.5	12g	—	ND	ND	ND	ND	ND	ND			
017-015BH	5.5-6.0	12g	—	ND	ND	ND	ND	ND	ND			
100 ppb STD				90	86	80	217	ND	473			
CALIBRATE				100	95	89	242	ND	526			
		ERASE LIBRARY. Recalibrate.										
100 ppb STD				2.1 V <sub>s</sub>	$\Rightarrow$ 100 mV <sub>s</sub> setting							
AIR BLANK				ND	ND	ND	ND	ND	ND			
017-015BH	5.5-6.0	12g	—	ND	ND	ND	ND	ND	ND			
017-015BH	9.0-9.5	12g	—	ND	ND	ND	ND	ND	ND			
017-013BH	5.5-6.0	10g	—	ND	ND	ND	ND	ND	ND			
017-013BH	2.0-2.5	12g	—	ND	ND	ND	ND	ND	ND			
017-013BH	9.5-10.0	12g	—	ABORTED					RUN			
017-013BH	9.5-10.0	12g	—	ND	ND	ND	ND	ND	ND			
100 ppb STD				80	74	67	136	ND	357			
CALIBRATE				100	93	84	170	ND	447			
AIR				ND	ND	ND	ND	ND	ND			

OPERATOR: Joe Byrd, Jr

DATE: 18 July 1994

# FIELD GC DATA SUMMARY

SITE: DULUTH ANGB, Site 17

GAIN: 10

CARRIER GAS FLOW: 13  $\mu$ l/min

GC OVEN TEMP: 40°C

ANALYSIS TIME: 450 sec

WINDOW:  $\pm 10\%$

MINIMUM AREA: 100 mVs

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Sample Dilution Factor	Concentrations (ppb)						Additional Analytes		
				Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total BTEX			
by run												
10 ppb STD				Gain was not properly set. Reset to 10								
10 ppb STD				1.9 Vs	$\Rightarrow$	100 mVs min. area						
12 BLANK				ND	ND	ND	ND	ND	ND			
7-014BH	2.0-2.5	12g	—	ND	21	ND	ND	ND	21			
7-014BH	4.5-5.0	10g	—	ND	ND	ND	ND	ND	ND			
7-014BH	9.5-10.0	12g	—	ND	22	ND	ND	ND	22			
7-012BH	2.0-2.5	12g	—	ND	21	ND	ND	ND	21			
7-012BH	5.5-6.0	12g	—	ND	20	ND	ND	ND	20			
10 ppb STD				82	75	77	147	ND	381			
1 Liberate				100	92	95	180	ND	467			
12 BLANK				ND	26	ND	ND	ND	26			
7-012 BH	9.5-10.0	14g	—	ND	25	ND	ND	ND	25			
7-011 BH	2.0-2.5	10g	—	ND	25	ND	ND	ND	25			
7-011 BH	5.5-6.0	10g	—	ND	ND	ND	ND	ND	ND			
7-011 BH	9.5-10.0	10g	—	ND	ND	ND	ND	ND	ND			
10 ppb STD				117	108	97	184	107	613			
1 Liberate				100	93	83	158	92	526			
10 ppb STD				2.5 Vs	$\Rightarrow$	100 mVs						
12 BLANK				ND	ND	ND	ND	ND	ND			
7-010 BH	4.5-5.0	12g	—	ND	ND	ND	ND	ND	ND			
7-010 BH	9.5-10	12g	—	ND	ND	ND	ND	ND	ND			
7-017 BH	1.5-2.0	10g	—	ND	ND	ND	ND	ND	ND			
7-017 BH	5.5-6.0	10g	—	ND	ND	ND	ND	ND	ND			

OPERATOR: Jack G. G. G.

DATE: 19 July 1984

## FIELD GC DATA SUMMARY

SITE: Duluth ANCB, Site 17

GAIN: 10

CARRIER GAS FLOW: 13  $\mu$ l / min

GC OVEN TEMP: 40°C

ANALYSIS TIME: 450 sec

WINDOW: ±10%

MINIMUM AREA: 100 mV

[illegible]

OPERATOR: Jacob G. G.

DATE: 19 July 1994



# FIELD GC DATA SUMMARY

SITE: DULUTH ANGB, Site 17  
 GAIN: 10  
 CARRIER GAS FLOW: 12.6  $\mu$ l/min

GC OVEN TEMP: 40°C  
 ANALYSIS TIME: 450 sec  
 WINDOW:  $\pm 10\%$   
 MINIMUM AREA: 50 mV

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Sample Dilution Factor	Concentrations (ppb)						Additional Analytes		
				Benzene	Toluene	Ethyl-benzene	m,p-Xylene	o-Xylene	Total BTEX			
0 ppb STD				1.3 VS	⇒ 65 mV	Set to 50 mV						
IR BLANK				ND	ND	ND	ND	ND	ND			
7-018 BH	2.0-2.5	10g	—	ND	ND	ND	ND	ND	ND			
7-018 BH	4.5-5.0	10g	—	ND	ND	ND	ND	ND	ND			
7-018 BH	9.5-10.0	12g	—	ND	ND	ND	ND	ND	ND			
0 ppb STD				89	72	83	151	ND	395			
LIBRATE				100	80	93	169	ND	442			
0 ppb STD				NEED TO ERASE LIBRARY & RESET LI								
LIBRATE												
0 ppb STD				2.0 VS	⇒ 100 mV	Seller						
IR BLANK				ND	ND	ND	ND	ND	ND			
7-019 BH	1.5-2.0	12g	—	ND	ND	ND	ND	ND	ND			
7-019 BH	5.0-6.0	10g	—	ND	ND	ND	ND	ND	ND			
7-019 BH	9.5-10.0	10g	—	ND	ND	ND	ND	ND	ND			
7-020 BH	2.0-2.5	12g	—	ND	ND	ND	ND	ND	ND			
7-020 BH	5.5-6.0	10g	—	ND	ND	ND	ND	ND	ND			
0 ppb STD				84	85	77	150	ND	396			
LIBRATE				100	101	92	180	ND	473			
IR BLANK				ND	ND	ND	ND	ND	ND			
7-020 BH	9.5-10.0	12g	—	ND	ND	ND	ND	ND	ND			
0 ppb STD				102	100	88	171	ND	461			
LIBRATE				100	99	87	169	ND	455			
IR BLANK				ND	ND	ND	ND	ND	ND			

OPERATOR: Joe Byrd Jr

DATE: 20 July 1994

# FIELD GC DATA SUMMARY

SITE: Duluth ANGB

GAIN: 10

CARRIER GAS FLOW: 12.9 ml/min

GC OVEN TEMP: 40°C

ANALYSIS TIME: 450 sec

WINDOW: ±10%

MINIMUM AREA: 100 mV

Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Sample Dilution Factor	Concentrations (ppb)						Additional Analytes		
				Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total BTEX			
100 ppb STD				1.6 V <sub>s</sub> ⇒		100 mV <sub>s</sub>	Setting					
AIR BLANK				ND	ND	ND	ND	ND	ND			
021-009 MW	—	10 ml	—	ND	ND	ND	ND	ND	ND			
021-010 MW	—	10 ml	—	ND	ND	ND	ND	ND	ND			
021-014 MW	—	10 ml	—	ND	ND	ND	ND	ND	ND			
021-026 MW	—	10 ml	—	ND	ND	ND	ND	ND	ND			
018-006 BH	2.5'	10g	—	ND	ND	ND	ND	ND	ND			
100 ppb STD												
CALIBRATION				needs INITIAL CALIBRATION								
100 ppb STD				1.5 V <sub>s</sub> ⇒		100 mV <sub>s</sub>	Setting					
AIR BLANK				ND	ND	ND	ND	ND	ND			
018-006 BH	1.7'	10g	—	ND	ND	ND	ND	ND	ND			
017-010 BH	1.5-2.5	10g	—	ND	ND	ND	ND	ND	ND			
018-007 BH	2.5'	10g	—	ND	ND	ND	ND	ND	ND	*		
100 ppb STD				1.2 mV <sub>s</sub> ⇒		50 mV <sub>s</sub>	Setting					
AIR BLANK				ND	ND	ND	ND	ND	ND			
021-004 SD	sediment	10g	—	ND	ND	ND	ND	ND	ND			
021-005 SD	sediment	10g	—	ND	ND	ND	ND	ND	ND			
021-006 SD	sediment	10g	—	ND	ND	ND	ND	ND	ND			
021-007 SD	sediment	12g	—	ND	ND	ND	ND	ND	ND			
018-007 BH	0.8-1.3	10g	—	ND	7	215	ND	1,224	1,446			
1 ppm BTEX				DRY	RUN	misses	SHOT					
	Set gain to	2.										
1. ppm STD				4.0 V <sub>s</sub> ⇒		Set Min Area to	20					

OPERATOR: for Byrd

DATE: 23 July 1994

\* Something pegged-out chromatogram. will reshoot later.

2

GC OVEN TEMP: 40°C  
ANALYSIS TIME: 450 sec  
WINDOW: 510 %  
MINIMUM AREA: 20 mV

[illegible]

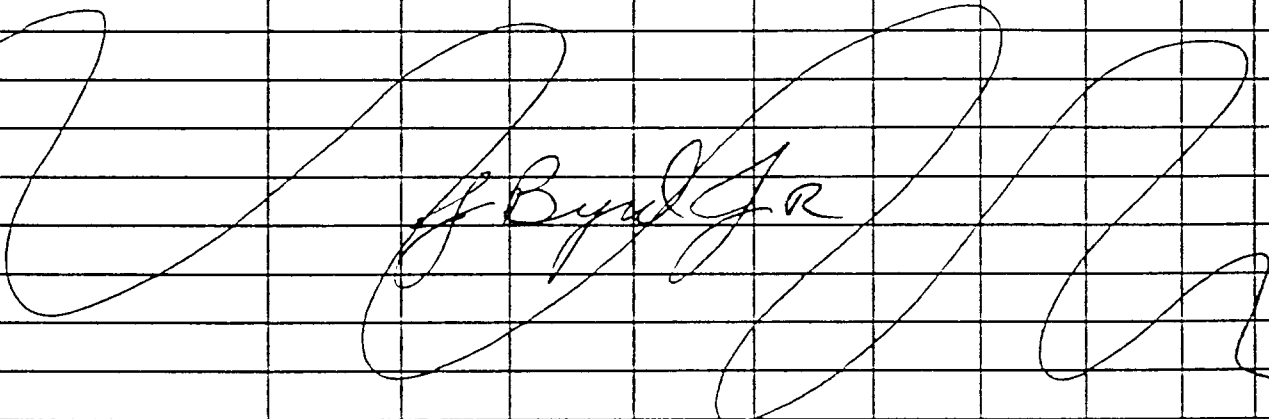
OPERATOR: J Byrd Jr

DATE: 23 July 1994

# FIELD GC DATA SUMMARY

SITE: DULUTH ANGB  
 GAIN: 1,000  
 CARRIER GAS FLOW: 11.3 ml/min  
12.0 ml/min

INJECTION VOLUME: 100 ul  
 GC OVEN TEMP: 40°C  
 ANALYSIS TIME: 750 sec 500 sec

Analysis No.	Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Concentrations (ppb)							
				Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total BETX		
19	100 PPB			NO	o-xylene	Peak					
20	100 PPB			100	100	100	200	100	600		
21	1 PPM			1,000	1,000	1,000	2,000	1,000	6,000		
22	10 PPM			10,000	10,000	10,000	20,000	10,000	60,000		
23	AIR BLANK			1	1	6	9	ND	17		
24	025-004BH	10'-12'	10	1	4	4	8	ND	17		
25	025-004BH	18'-20'	10	1	3	ND	ND	ND	4		
26	021-026BH	8'-10'	10	1	3	ND	ND	ND	4		
27	021-026BH	4'-6'	10	1	2	4	5	ND	12		
28	<sup>RESHOT</sup> 025-004BH	5'-7'	10	1	3	2	6	ND	12	Peak	
29	100 PPB			106	103	98	188	68	563		
											

Calibration Information		Analytes							
		Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene			
0.1 ppm	Retention Time	64.2	126.1	258.4	277.8	324.5			
	Response	201	130.8	79.9	58.9	9.1			
1 ppm	Retention Time	64.6	126.5	259.4	278.4	325.8			
	Response	5637	3045	1685	1097	339			
10 ppm	Retention Time	65.2	127.7	260.2	278.4	325.3			
	Response	17,771	19,993	10,465	6,731	1323			

OPERATOR: J. Byrd Jr.

DATE: 16 May 95

# FIELD GC DATA SUMMARY

SITE: DULUTH ANGB  
 GAIN: 1,000  
 CARRIER GAS FLOW: 12 ul/min

INJECTION VOLUME: 100 ul  
 GC OVEN TEMP: 40°C  
 ANALYSIS TIME: 460 sec  
500 sec

Analysis No.	Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Concentrations (ppb)							
				Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total BETX		
1	100 PPB			ND							
2	100 PPB			ND							
3	100 PPB			100	100	100	200	100	600		
4	1 PPM			1,000	1,000	1,000	2,000	1,000	6,000		
5	10 PPM			10,000	10,000	10,000	20,000	1,000	60,000		
6	AIR BLANK			1	12	ND	83	20	116		
7	021-027 BH	4'-6'	10	1	3	ND	31	11	56		
8	021-027 BH	8'-10'	10	ND	3	3	8	4	18		
9	AIR BLANK			2	1	ND	ND	ND	3		
10	021-028 BH	0.5'-2.5'	10	ND	2	2	3	2	9		
11	021-028 BH	8'-10'	20	ND	2	3	5	5	15		
12	100 PPB			97	70	62	119	51	399		
	RECAL			100	100	100	200	100	600		
13	AIR BLANK			3	ND	1	ND	ND	4		
14	025-012 BH	0.5'-2.5'	10	3	21	17	ND	39	80		
15	025-012 BH	5'-7'	10	A lot of peaks, but no readings							
16	<sup>20 ul injection</sup> 025-012 BH	5'-7'	10	ND	ND	ND	ND	ND	ND	Resist	
17	025-012 BH	10'-12'	10	48	31	4	ND	14	97		
18	025-012 BH	18'-20'	10	41	46	ND	ND	ND	87		
19	100 PPB			77	84	80	151	78	470		

Calibration Information		Analytes							
		Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene			
0.1 ppm	Retention Time	76.5	138.5	267.2	285.6	337.3			
	Response	277	182	107	130	48			
1 ppm	Retention Time	77.2	138.9	268.2	286.6	337.3			
	Response	7577	3536	2385	2445	1001			
10 ppm	Retention Time	79.8	141.3	272.2	289.8	341.0			
	Response	31,558	26021	18,552	18,370	5875			

OPERATOR: J Byrd Jr

DATE: 17 May 95

# FIELD GC DATA SUMMARY

SITE: DULUTH AW6B  
 GAIN: 1000  
 CARRIER GAS FLOW: 12  $\mu$ l/min

INJECTION VOLUME: 100  $\mu$ l  
 GC OVEN TEMP: 40°C  
 ANALYSIS TIME: 500 sec

Analysis No.	Boring	Sample Interval (ft. BLS)	Sample Mass (grams)	Concentrations (ppb)							
				Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Total BETX		
	Recal			100	100	100	200	100	600		
20	AIR BLANK			3	ND	1	ND	73	77		
21	025-013 BH	05'-25'	10	4	3	1	3	ND	11		
22	025-013 BH	5'-7'	10	3	2	20	ND	106	131		
23	025-013 BH	10'-12'	10	4	2	4	2	ND	12		
24	025-013 BH	18'-20'	10	10	17	3	ND	4	34		
25	100 PPB			96	92	87	178	93	546		
	Recal			100	100	100	200	100	600		
26	AIR BLANK			1	ND	ND	ND	ND	1		
27	017-024 BH	0.5'-2.5'	6	1	ND	8	ND	13	22		
28	017-024 BH	4'-6'	10	4	1	ND	44	ND	49		
<del>29</del>	<del>017-024 BH</del>	<del>8'-10'</del>	<del>15</del>	<del>Bygones</del>							
30	017-025 BH	0.5'-2.5'	10	6	1	4	9	ND	20		
30	017-024 BH	8'-10'	15	11	ND	16	ND	4	31		
31	017-025 BH	4'-6'	10	6	1	4	ND	ND	11		
32	100 PPB			96	81	64	115	108	464		
	Recal			100	100	100	200	100	600		
33	AIR BLANK			5	ND	4	ND	4	13		
34	017-022 BH	0.5'-2.5'	10	5	3	7	12	1	28		
35	017-023 BH	0.5'-2.5'	10	3	3	7	9	ND	22		

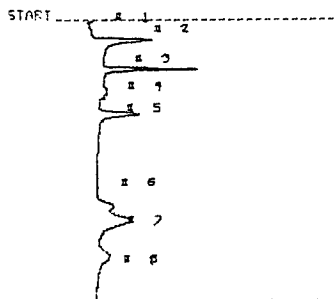
Calibration Information		Analytes							
		Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene			
0.1 ppm	Retention Time	<del>96.7</del>	144.4	276.1	293.8	347			
	Response	93.8							
1 ppm	Retention Time								
	Response								
10 ppm	Retention Time								
	Response								

OPERATOR: gB yulpr

DATE: 17 May 95



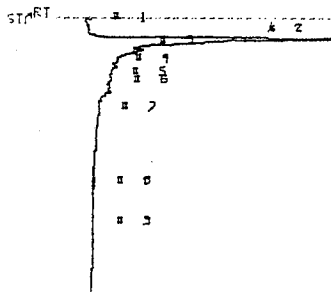
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STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 12:41  
 ANALYSIS # 5 158 PPM STD  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 012-025 10-11

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.7	1.8 US
BENZENE	3	78.3	37.80 PPM
UNKNOWN	4	117.4	125.2 PPM
TOLUENE	5	152.6	100.8 PPM
E-BEN, MP-XYL	7	324.9	231.6 PPM

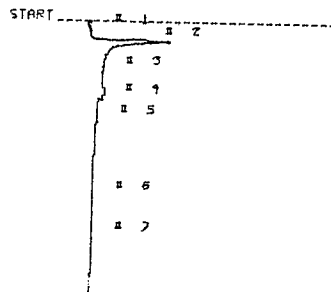
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STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 13: 5  
 ANALYSIS # 15 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 012-025 10-11

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.1	2.8 US
UNKNOWN	3	51.1	2.1 US

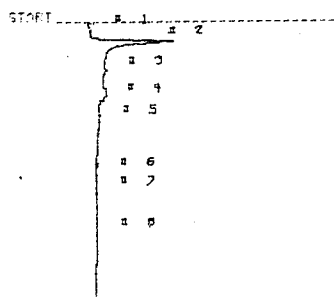
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 13:35  
 ANALYSIS # 18 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 021-023 1.5-2.0

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	32.0	3.3 US
BENZENE	3	78.3	73.84 PPM
UNKNOWN	4	117.4	373.2 PPM

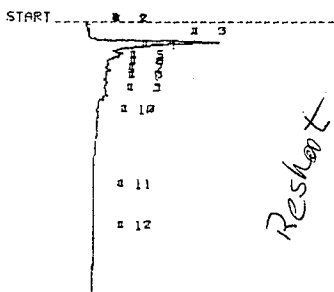
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 12:52  
 ANALYSIS # 13 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 012-025 1.5-2.0

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.7	3.3 US
BENZENE	3	78.3	82.32 PPM
UNKNOWN	4	117.4	838.3 PPM
TOLUENE	5	152.6	3.718 PPM

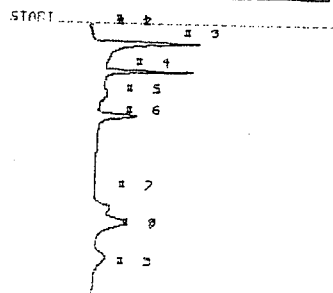
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 13:14  
 ANALYSIS # 16 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 012-025 10-11

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.7	2.8 US
UNKNOWN	4	51.1	125.2 PPM

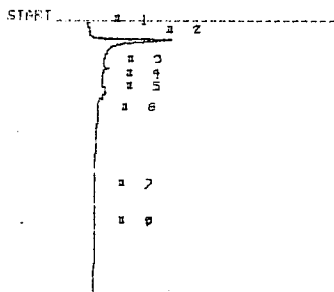
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STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 13:44  
 ANALYSIS # 19 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 021-023 1.5-2.0

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	31.7	3.3 US
BENZENE	4	78.3	176.0 PPM
UNKNOWN	5	117.4	351.3 PPM
TOLUENE	6	151.5	33.24 PPM
E-BEN, MP-XYL	8	324.9	277.1 PPM

# PHOTOVAC

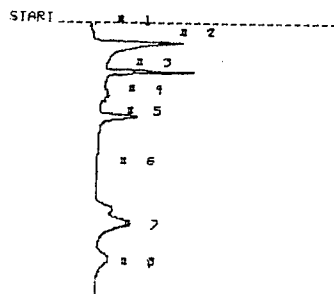


STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 13:52  
 ANALYSIS # 23 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 012-025 10-11

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.7	3.3 US
BENZENE	3	78.3	82.32 PPM
UNKNOWN	4	117.4	838.3 PPM
UNKNOWN	5	152.6	3.718 PPM



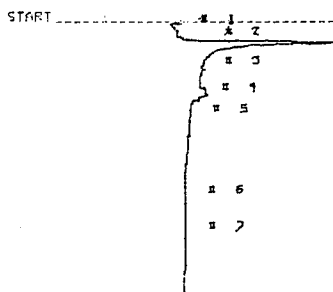
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STOP # 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 13:57  
 ANALYSIS # 20 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 1021-023 1.5-2.0

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.2	4.1 US
UNKNOWN	3	78.3	2.5 US
UNKNOWN	4	112.4	1.2 US
UNKNOWN	5	152.6	1.9 US
UNKNOWN	7	327.1	2.6 US

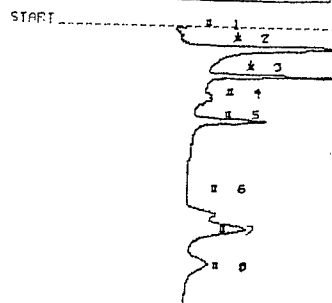
# PHOTOVAC



STOP # 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 14:20  
 ANALYSIS # 22 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 10 AIR BLANK

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.2	7.4 US
BENZENE	3	78.3	38.41 PPM
UNKNOWN	4	112.4	1.2 US

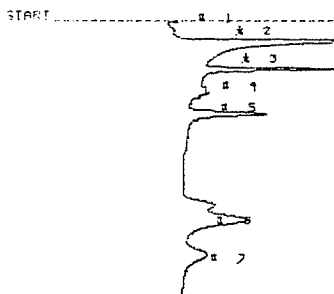
# PHOTOVAC



STOP # 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 14:38  
 ANALYSIS # 24 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 10 100 PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.5	3.1 US
BENZENE	3	77.1	31.46 PPM
UNKNOWN	4	112.4	1.6 US
TOLUENE	5	152.6	33.33 PPM
E-BENZ, NP-XYL	7	327.1	271.6 PPM

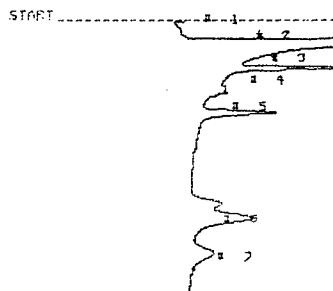
# PHOTOVAC



STOP # 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 14:26  
 ANALYSIS # 21 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 10 021-023 1.5-2.0

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.3	11.2 US
UNKNOWN	3	77.3	5.2 US
UNKNOWN	4	112.4	1.8 US
UNKNOWN	5	151.5	1.9 US
UNKNOWN	6	327.1	5.2 US

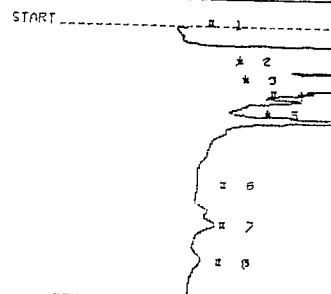
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STOP # 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 14:28  
 ANALYSIS # 23 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 10 100 PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	35.4	31.5 US
BENZENE	3	76.6	123.5 PPM
UNKNOWN	4	111.3	1.4 US
TOLUENE	5	151.5	46.21 PPM
E-BENZ, NP-XYL	6	327.1	271.3 PPM

# PHOTOVAC



STOP # 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 14:43  
 ANALYSIS # 25 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 10 021-023 10.5-11

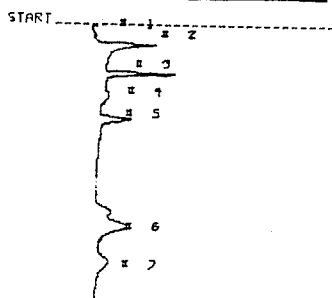
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	48.2	133.3 US
UNKNOWN	3	86.3	19.9 US
TOLUENE	5	149.3	220.0 PPM
E-BENZ, NP-XYL	7	327.1	33.31 PPM

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

BENZENE	1	77.0	100.0 PPM
TOLUENE	2	151.5	100.0 PPM
E-BENZ, NP-XYL	3	327.1	100.0 PPM

# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 14:53  
 ANALYSIS # 26 J BYRD, JR.  
 INTERNAL TEMP 39 DULUTH ANG  
 GAIN 5 100 PPS

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	32.0	2.7 US
BENZENE	3	79.3	72.90 PPS
UNKNOWN	4	112.4	252.5 PPS
UNKNOWN	5	152.6	33.19 PPS
E-BEN, MP-XYL	6	322.1	225.5 PPS

# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

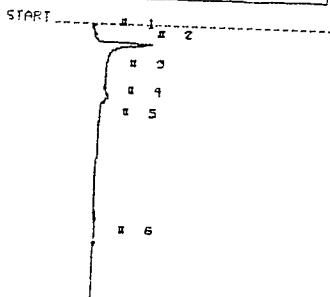
SAMPLE LIBRARY 1 JUL 13 1994 15:1  
 ANALYSIS # 26 J BYRD, JR.  
 INTERNAL TEMP 39 DULUTH ANG  
 GAIN 5 100 PPS

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	32.0	2.7 US
BENZENE	3	79.3	100.0 PPS
UNKNOWN	4	112.4	252.5 PPS
UNKNOWN	5	152.6	119.1 PPS
E-BEN, MP-XYL	6	322.1	225.6 PPS

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT  
 BEN 1 70.3 100.0 PPS  
 TOL 2 152.6 100.0 PPS  
 E-BEN, MP-XYL 3 322.1 100.0 PPS

# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 15:23  
 ANALYSIS # 28 J BYRD, JR.  
 INTERNAL TEMP 39 DULUTH ANG  
 GAIN 5 100 PPS

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	32.0	2.6 US
BEN	3	79.3	21.04 PPS
UNKNOWN	4	112.4	149.2 PPS

# PHOTOVAC

JUL 13 1994 15:06

FIELD: 30  
 POWER: 42

SAMPLE	0.0	0.0
CAL	0.0	0.0
EVENT 3	0.0	0.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 8	0.0	0.0

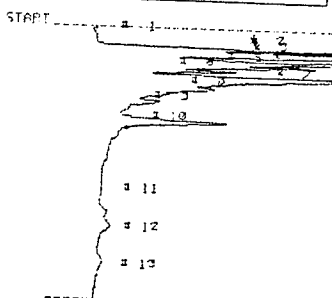
# PHOTOVAC

JUL 13 1994 15:07

FIELD: 30  
 POWER: 43

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 8	0.0	0.0

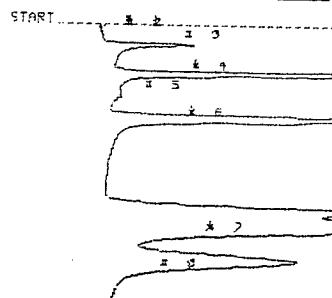
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 15:32  
 ANALYSIS # 23 J BYRD, JR.  
 INTERNAL TEMP 39 DULUTH ANG  
 GAIN 5 100 PPS

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.6	4.1 US
UNKNOWN	3	39.5	3.4 US
UNKNOWN	4	53.7	3.2 US
UNKNOWN	5	59.1	3.5 US
UNKNOWN	6	63.1	2.3 US
BEN	7	76.7	612.9 PPS
UNKNOWN	8	92.5	3.2 US
TOL	13	151.5	333.0 PPS
E-BEN MP-XYL	12	324.6	136.7 PPS

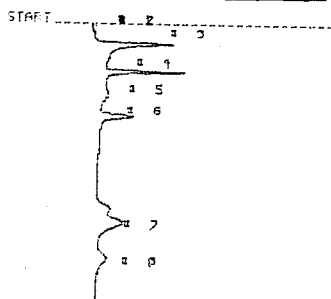
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 15:42  
 ANALYSIS # 32 J BYRD, JR.  
 INTERNAL TEMP 39 DULUTH ANG  
 GAIN 5 1 PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	3.5	5.3 PPS
UNKNOWN	3	31.7	3.5 US
UNKNOWN	4	76.8	10.5 US
UNKNOWN	5	111.0	1.5 US
UNKNOWN	6	149.3	15.0 US
UNKNOWN	7	311.1	233.5 US

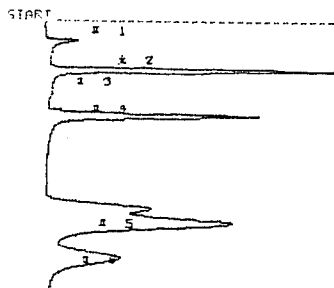
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 15:12  
 ANALYSIS # 27 J BYRD, JR.  
 INTERNAL TEMP 39 DULUTH ANG  
 GAIN 5 100 PPS

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	31.7	3.1 US
UNKNOWN	4	78.2	2.2 US
UNKNOWN	5	112.4	292.2 PPS
UNKNOWN	8	322.5	212.0 PPS

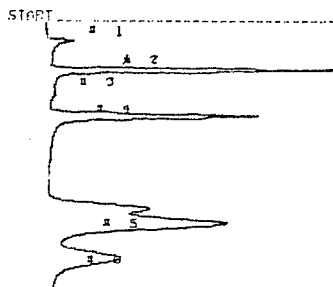
# PHOTOVAC



STOP @ 430.0  
SAMPLE LIBRARY 2 JUL 13 1994 15:55  
ANALYSIS # 33 J BYRD, JR  
INTERNAL TEMP 34 DULUTH ANG8  
GAIN 2 1 PPM

COMPOUND NAME PEAK R.T. AREA/PPM  
UNKNOWN 1 32.0 791.9 μS

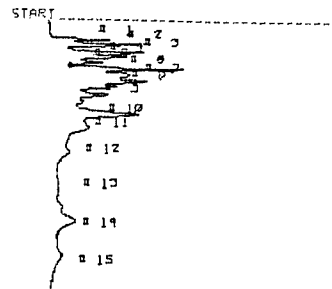
# PHOTOVAC



STOP @ 430.0  
SAMPLE LIBRARY 2 JUL 13 1994 16:15  
ANALYSIS # 35 J BYRD, JR  
INTERNAL TEMP 34 DULUTH ANG8  
GAIN 2 1 PPM

COMPOUND NAME PEAK R.T. AREA/PPM  
UNKNOWN 1 32.0 1.0 μS  
UNKNOWN 2 26.8 2.3 μS  
UNKNOWN 3 111.0 368.3 μS  
UNKNOWN 4 152.6 6.3 μS  
UNKNOWN 5 327.1 17.9 μS

# PHOTOVAC



STOP @ 430.0  
SAMPLE LIBRARY 2 JUL 13 1994 16:39  
ANALYSIS # 37 J BYRD, JR  
INTERNAL TEMP 34 DULUTH ANG8  
GAIN 2 021-022 6.0-6.5

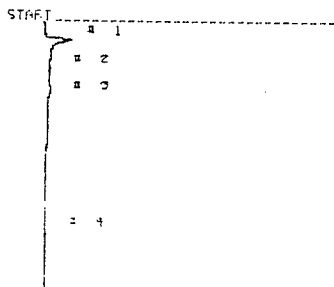
COMPOUND NAME PEAK R.T. AREA/PPM  
UNKNOWN 1 32.0 744.3 μS  
UNKNOWN 2 33.5 1.7 μS  
UNKNOWN 3 31.5 1.3 μS  
UNKNOWN 4 53.1 1.1 μS  
UNKNOWN 5 69.6 371.4 μS  
BENZ 6 30.3 315.2 μS  
UNKNOWN 7 38.2 2.6 μS  
UNKNOWN 8 120.3 31.4 μS  
UNKNOWN, PXTL 9 327.1 322.3 μS

# PHOTOVAC

2 COMPOUND ID # R.T. LIMIT

BENZENE 1 32.0 1.000 PPM  
EBEN, PXTL 3 327.1 1.000 PPM

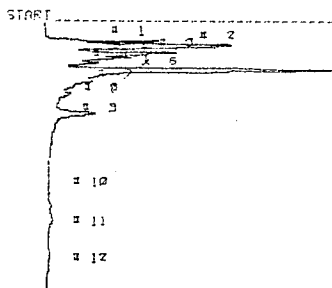
# PHOTOVAC



STOP @ 430.0  
SAMPLE LIBRARY 2 JUL 13 1994 16: 6  
ANALYSIS # 34 J BYRD, JR  
INTERNAL TEMP 34 DULUTH ANG8  
GAIN 2 AIR

COMPOUND NAME PEAK R.T. AREA/PPM  
UNKNOWN 1 32.0 791.9 μS  
UNKNOWN 3 117.4 48.6 μS  
UNKNOWN 4 323.3 6.3 μS

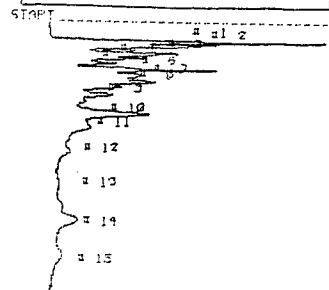
# PHOTOVAC



STOP @ 430.0  
SAMPLE LIBRARY 2 JUL 13 1994 16:28  
ANALYSIS # 36 J BYRD, JR  
INTERNAL TEMP 34 DULUTH ANG8  
GAIN 2 1 PPM

COMPOUND NAME PEAK R.T. AREA/PPM  
UNKNOWN 1 32.0 1.2 μS  
UNKNOWN 2 33.5 4.3 μS  
UNKNOWN 3 31.5 2.5 μS  
UNKNOWN 4 53.1 1.1 μS  
UNKNOWN 5 61.5 227.2 μS  
BENZ 6 30.3 1.110 PPM  
UNKNOWN 7 38.2 1.2 μS  
TOLUENE 8 152.5 112.5 PPM  
EBEN, PXTL 11 327.1 61.10 PPM

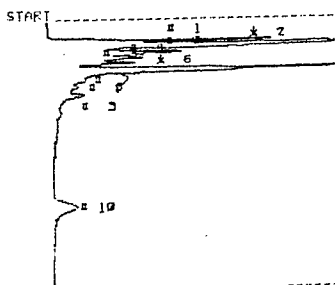
# PHOTOVAC



STOP @ 430.0  
SAMPLE LIBRARY 2 JUL 13 1994 16:50  
ANALYSIS # 38 J BYRD, JR  
INTERNAL TEMP 34 DULUTH ANG8  
GAIN 2 021-022 6.0-6.5

COMPOUND NAME PEAK R.T. AREA/PPM  
UNKNOWN 1 32.0 3.4 μS  
UNKNOWN 2 32.4 0.5 μS  
UNKNOWN 3 31.5 2.7 μS  
UNKNOWN 4 59.1 1.5 μS  
UNKNOWN 5 63.5 1.2 μS  
BENZ 6 30.3 334.3 PPM  
UNKNOWN 7 38.2 2.4 μS  
UNKNOWN 8 38.2 2.3 μS  
UNKNOWN 9 120.4 334.4 μS  
TOLUENE 10 152.5 233.6 PPM  
UNKNOWN 11 176.4 360.2 μS  
UNKNOWN 12 209.0 62.3 μS  
EBEN, PXTL 14 327.1 720.3 PPM

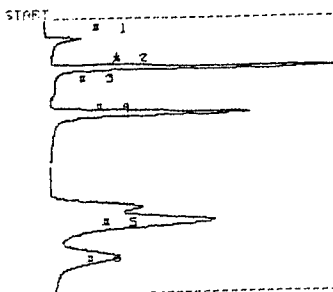
# PHOTOVAC



STOP 9 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 17:4  
 ANALYSIS # 39 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 021-024 16.5-17

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.9	2.5 US
UNKNOWN	2	38.9	2.1 US
UNKNOWN	3	51.1	2.9 US
UNKNOWN	4	63.1	1.3 US
UNKNOWN	5	68.5	1.4 US
UNKNOWN	6	122.3	122.3 PPM

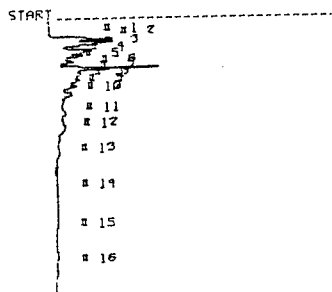
# PHOTOVAC



STOP 9 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 17:31  
 ANALYSIS # 41 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 1 PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.9	1.4 US
BENZ	2	79.9	1.091 PPM
UNKNOWN	3	110.2	619.9 MUS
TOLUENE	4	153.7	376.1 PPM
EBEN, MPXYL	5	329.3	2.711 PPM

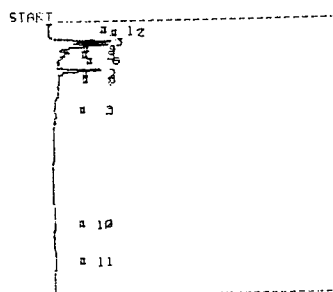
# PHOTOVAC



STOP 9 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 17:55  
 ANALYSIS # 44 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 021-022 14.5-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.6	904.1 MUS
UNKNOWN	2	37.7	1.2 US
UNKNOWN	3	51.9	992.1 MUS
UNKNOWN	4	53.5	535.2 MUS
UNKNOWN	5	68.1	333.3 MUS
BENZ	6	79.5	243.1 PPM
UNKNOWN	7	88.5	824.9 MUS
UNKNOWN	8	88.8	694.5 MUS
UNKNOWN	9	108.5	835.7 MUS
UNKNOWN	10	121.7	710.4 MUS
TOLUENE	11	151.5	11.78 PPM
UNKNOWN	12	175.6	113.5 MUS
EBEN, MPXYL	13	329.3	11.35 PPM

# PHOTOVAC



STOP 9 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 17:01  
 ANALYSIS # 40 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 021-022 14.5-15

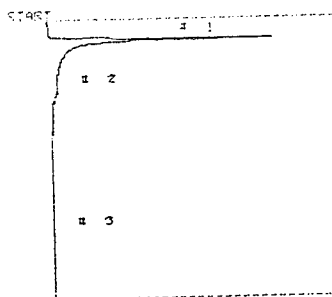
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.5	759.8 MUS
UNKNOWN	2	37.7	1.0 US
UNKNOWN	3	51.5	935.9 MUS
UNKNOWN	4	58.5	242.2 MUS
UNKNOWN	5	62.1	122.4 MUS
BENZ	6	79.5	141.5 PPM
UNKNOWN	7	88.5	226.5 MUS
UNKNOWN	8	102.4	230.2 MUS
TOLUENE	9	153.7	2.688 PPM
EBEN, MPXYL	10	329.3	11.33 PPM

# PHOTOVAC

STOP 9 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 17:35  
 ANALYSIS # 42 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 1 PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
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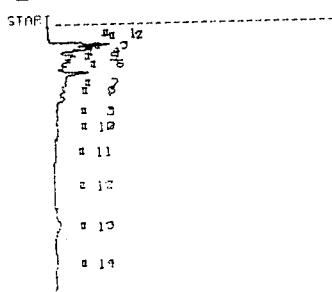
# PHOTOVAC



STOP 9 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 17:43  
 ANALYSIS # 43 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 1 PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.3	5.9 US
UNKNOWN	2	111.8	241.8 MUS

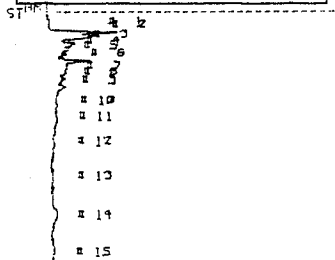
# PHOTOVAC



STOP 9 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 18:0  
 ANALYSIS # 45 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 021-022 14.5-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.3	332.3 PPM

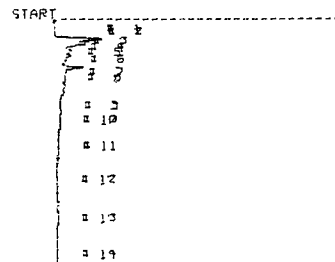
# PHOTOVAC



STOP 2 400.0  
 SAMPLE LIBRARY 2 JUL 13 1994 18:16  
 ANALYSIS # 46 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 021-021 14.5-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.3	1.0 US
UNKNOWN	2	37.4	583.9 US
UNKNOWN	3	51.5	273.7 US
UNKNOWN	4	52.6	224.7 US
UNKNOWN	5	68.8	204.3 US
BENZ	6	78.9	102.5 PPM
EBEN, MPXYL	14	227.1	50.56 PPM

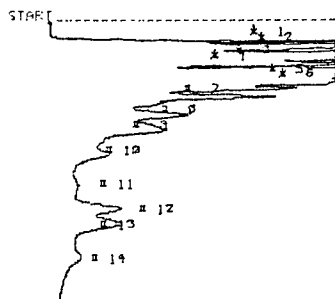
# PHOTOVAC



STOP 2 400.0  
 SAMPLE LIBRARY 2 JUL 13 1994 18:27  
 ANALYSIS # 47 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 021-023 14.5-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.3	744.2 MUG
UNKNOWN	2	37.4	733.7 MUG
UNKNOWN	3	51.5	273.7 MUG
UNKNOWN	4	52.6	224.7 MUG
UNKNOWN	5	68.8	204.3 MUG
BENZ	6	78.9	102.5 PPM
UNKNOWN	7	88.9	273.7 MUG
UNKNOWN	3	108.4	273.7 MUG

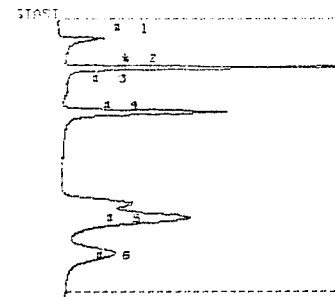
# PHOTOVAC



STOP 2 400.0  
 SAMPLE LIBRARY 2 JUL 13 1994 18:30  
 ANALYSIS # 48 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 021-024 10.5-11

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.4	4.3 US
UNKNOWN	2	38.5	12.9 US
UNKNOWN	3	55.5	23.3 US
UNKNOWN	4	67.7	6.2 US
BENZ	5	82.4	6.104 PPM
UNKNOWN	9	125.7	202.5 MUG
TOLUENE	8	151.5	148.4 PPM
UNKNOWN	8	175.5	303.4 MUG
UNKNOWN	13	214.3	34.3 MUG
UNKNOWN	11	258.2	121.3 MUG
EBEN, MPXYL	12	302.5	407.3 PPM
EBEN, MPXYL	13	328.3	324.5 PPM

# PHOTOVAC



STOP 2 400.0  
 SAMPLE LIBRARY 2 JUL 13 1994 18:51  
 ANALYSIS # 49 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 1 PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	31.7	1.2 US
BENZ	2	77.7	344.2 PPM
UNKNOWN	3	111.9	330.4 MUG
TOLUENE	4	152.6	674.4 PPM
EBEN, MPXYL	5	227.1	2.955 PPM

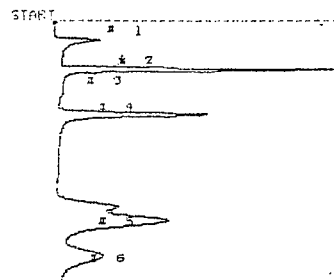
# PHOTOVAC

CALIBRATED PEAK 2, BENZ

SAMPLE LIBRARY 2 JUL 13 1994 18:53  
 ANALYSIS # 49 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 1 PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	31.7	1.2 US
BENZ	2	77.7	1.000 PPM
UNKNOWN	3	111.9	330.4 MUG
TOLUENE	4	152.6	738.4 PPM
EBEN, MPXYL	5	227.1	2.933 PPM

# PHOTOVAC



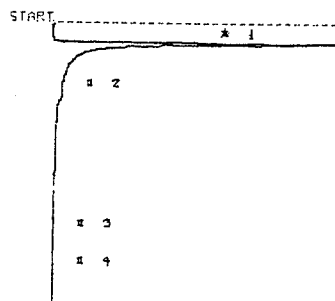
STOP 2 400.0  
 SAMPLE LIBRARY 2 JUL 13 1994 19:14  
 ANALYSIS # 50 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 1 PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.3	1.2 US
UNKNOWN	2	77.7	6.5 US
UNKNOWN	3	111.9	336.5 MUG
UNKNOWN	4	152.6	4.2 US
UNKNOWN	5	227.1	10.9 US

# PHOTOVAC

2	COMPOUND	ID #	R.T.	LIMIT
BENZ	1	77.5	1.000 PPM	
TOLUENE	2	152.6	1.000 PPM	
EBENZ	MPXYL	3	227.1	1.000 PPM

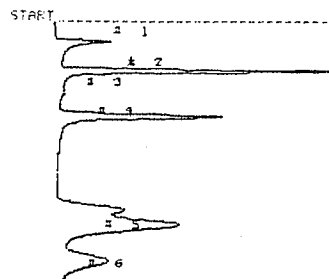
# PHOTOVAC



STOP 8 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 19:18  
 ANALYSIS # 51 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 *AIR BLANK*

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	31.5	7.5 US

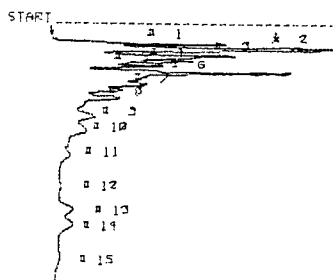
# PHOTOVAC



STOP 8 430.0 JUL 13 1994 19:46  
 SAMPLE LIBRARY 2  
 ANALYSIS # 53 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 1 PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.3	1.8 US
UNKNOWN	2	124.2	1.113 PPM
UNKNOWN	3	124.2	1.113 PPM
UNKNOWN	4	124.2	1.113 PPM
UNKNOWN	5	124.2	1.113 PPM

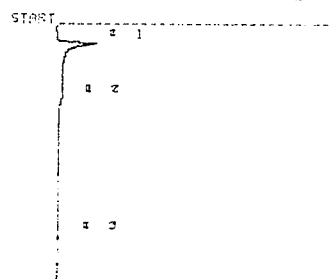
# PHOTOVAC



STOP 8 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 19:20  
 ANALYSIS # 52 J BYRD, JR  
 INTERNAL TEMP 33 DULUTH ANG8  
 GAIN 2 021-024 10.5-11

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.5	2.0 US
UNKNOWN	2	32.5	2.0 US
UNKNOWN	3	32.5	2.0 US
UNKNOWN	4	32.5	2.0 US
UNKNOWN	5	32.5	2.0 US
UNKNOWN	6	32.5	2.0 US
UNKNOWN	7	32.5	2.0 US
UNKNOWN	8	32.5	2.0 US
UNKNOWN	9	32.5	2.0 US
UNKNOWN	10	32.5	2.0 US
UNKNOWN	11	32.5	2.0 US
UNKNOWN	12	32.5	2.0 US
UNKNOWN	13	32.5	2.0 US
UNKNOWN	14	32.5	2.0 US
UNKNOWN	15	32.5	2.0 US

# PHOTOVAC



STOP 8 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 19:56  
 ANALYSIS # 54 J BYRD, JR  
 INTERNAL TEMP 33 DULUTH ANG8  
 GAIN 2 AIR

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.3	1.0 US

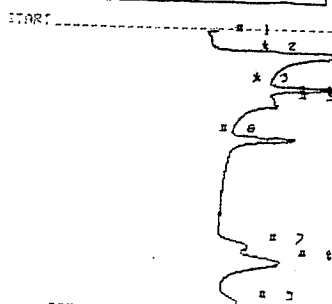
# PHOTOVAC

JUL 14 1994 9:10

FIELD: 23  
POWER: 43

SAMPLE	0.0	10.0
0.0	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

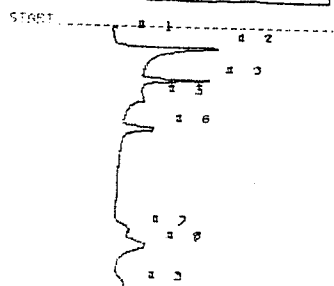
# PHOTOVAC



STOP 3 100.0  
SAMPLE LIBRARY 1 JUL 14 1994 9:15  
ANALYSIS # 3 J BYRD, JR.  
INTERNAL TEMP 23 DULUTH ANG  
GAIN 10 100 PPB

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	2	26.1	11.1 US
UNKNOWN	3	100.0	100.0 US
UNKNOWN	4	100.0	100.0 US

# PHOTOVAC



STOP 3 100.0  
SAMPLE LIBRARY 1 JUL 14 1994 9:21  
ANALYSIS # 4 J BYRD, JR.  
INTERNAL TEMP 23 DULUTH ANG  
GAIN 5 100 PPB

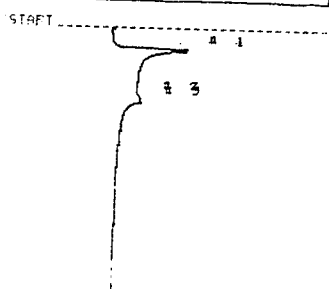
COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	2	26.1	11.1 US
UNKNOWN	3	100.0	100.0 US
UNKNOWN	4	100.0	100.0 US

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

BENZENE	1	81.3	100.0 PPB
TOLUENE	2	150.5	100.0 PPB
E-BENZENE	3	316.1	100.0 PPB
MP-XYLENE	4	333.5	100.0 PPB

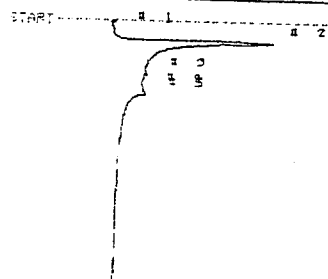
# PHOTOVAC



STOP 3 100.0  
SAMPLE LIBRARY 1 JUL 14 1994 9:33  
ANALYSIS # 5 J BYRD, JR.  
INTERNAL TEMP 23 DULUTH ANG  
GAIN 5 AIR

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	1	26.1	11.1 US

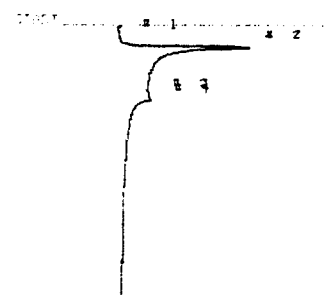
# PHOTOVAC



STOP 3 100.0  
SAMPLE LIBRARY 1 JUL 14 1994 9:43  
ANALYSIS # 6 J BYRD, JR.  
INTERNAL TEMP 30 DULUTH ANG  
GAIN 5 021-024 2.0-2.5

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	2	26.1	11.1 US

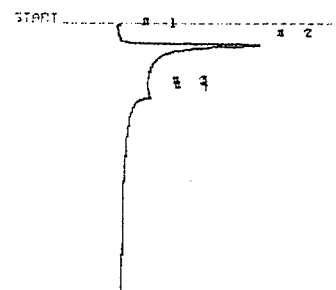
# PHOTOVAC



STOP 3 100.0  
SAMPLE LIBRARY 1 JUL 14 1994 9:50  
ANALYSIS # 8 DULUTH ANG  
GAIN 5 021-021 2.0-2.5

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	2	26.1	11.1 US

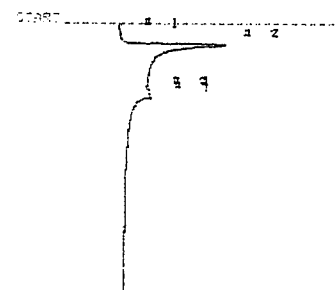
# PHOTOVAC



STOP 3 100.0  
SAMPLE LIBRARY 1 JUL 14 1994 10:3  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 30 DULUTH ANG  
GAIN 5 021-020 10.5-11\*

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	2	26.1	11.1 US

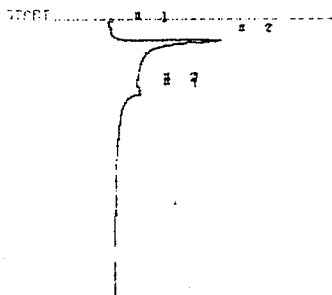
# PHOTOVAC



STOP 3 100.0  
SAMPLE LIBRARY 1 JUL 14 1994 10:14  
ANALYSIS # 9 J BYRD, JR.  
INTERNAL TEMP 30 DULUTH ANG  
GAIN 5 021-021 6.5-7.0

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	2	26.1	11.1 US

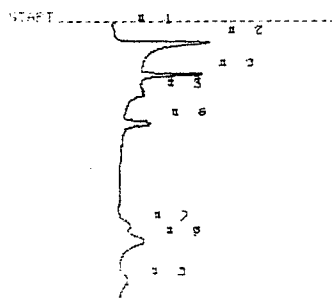
# PHOTOVAC



STOP 0 433.0  
 SAMPLE LIBRARY 1 JUL 14 1994 10:24  
 ANALYSIS # 10 J BYRD, JR.  
 INTERNAL TEMP 31 DULUTH ANG5  
 GAIN 5 021-024 6.5-7.0

COMPOUND NAME PEAK R.T. AREA/WT  
 UNKNOWN 2 32.4 0.0 0.0

# PHOTOVAC



STOP 2 433.0  
 SAMPLE LIBRARY 1 JUL 14 1994 10:33  
 ANALYSIS # 11 J BYRD, JR.  
 INTERNAL TEMP 31 DULUTH ANG5  
 GAIN 5 100 PPB

COMPOUND NAME PEAK R.T. AREA/WT  
 UNKNOWN 2 32.4 0.0 0.0  
 BENZENE 2 32.2 24.31 0.0  
 TOLUENE 4 153.1 23.31 0.0  
 E-BENZENE 2 312.1 23.12 0.0  
 M-XYLENE 2 312.1 23.12 0.0

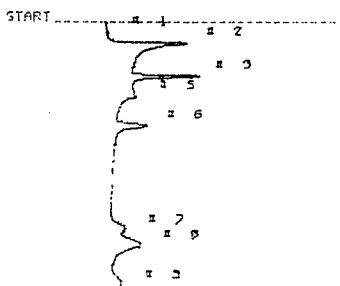
# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 14 1994 10:34  
 ANALYSIS # 11 J BYRD, JR.  
 INTERNAL TEMP 31 DULUTH ANG5  
 GAIN 5 100 PPB

COMPOUND NAME PEAK R.T. AREA/WT  
 UNKNOWN 2 32.4 0.0 0.0  
 BENZENE 2 32.2 100.0 0.0  
 TOLUENE 4 153.1 24.22 0.0  
 E-BENZENE 2 312.1 24.31 0.0  
 M-XYLENE 2 312.1 24.31 0.0

# PHOTOVAC



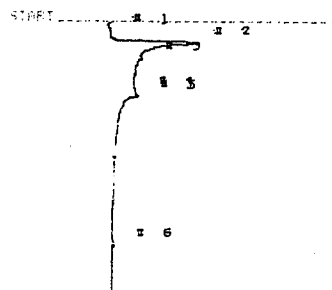
STOP 0 433.0  
 SAMPLE LIBRARY 1 JUL 14 1994 11:21  
 ANALYSIS # 12 J BYRD, JR.  
 INTERNAL TEMP 32 DULUTH ANG5  
 GAIN 5 100 PPB

COMPOUND NAME PEAK R.T. AREA/WT  
 UNKNOWN 2 32.4 0.0 0.0  
 BENZENE 2 32.2 24.31 0.0  
 TOLUENE 4 153.1 23.31 0.0  
 E-BENZENE 2 312.1 23.12 0.0  
 M-XYLENE 2 312.1 23.12 0.0

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT  
 BENZENE 1 32.2 100.0 PPB  
 TOLUENE 2 153.1 100.0 PPB  
 E-BENZENE 3 312.1 100.0 PPB  
 M-XYLENE 1 312.1 100.0 PPB

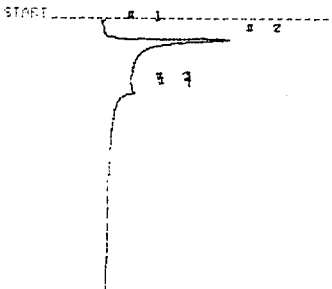
# PHOTOVAC



STOP 1 433.0  
 SAMPLE LIBRARY 1 JUL 14 1994 11:34  
 ANALYSIS # 13 J BYRD, JR.  
 INTERNAL TEMP 32 DULUTH ANG5  
 GAIN 5 AIR

COMPOUND NAME PEAK R.T. AREA/WT  
 UNKNOWN 2 32.4 0.0 0.0

# PHOTOVAC

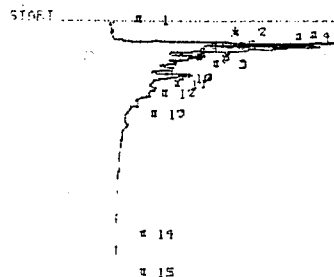


STOP 2 433.0  
 SAMPLE LIBRARY 1 JUL 14 1994 11:44  
 ANALYSIS # 14 J BYRD, JR.  
 INTERNAL TEMP 32 DULUTH ANG5  
 GAIN 5 021-024 6.5-7.0

COMPOUND NAME PEAK R.T. AREA/WT  
 UNKNOWN 2 32.4 0.0 0.0



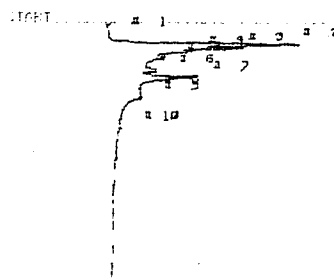
# PHOTOVAC



STEP 2 100.0  
 SAMPLE LIBRARY 15 JUL 14 1934 11:54  
 ANALYSIS # 17 J BYRD, JR.  
 INTERNAL TEMP 32 DULUTH ANG  
 GAIN 5 021-021 11.5-12

COMPOUND NAME	PEAK	RT	AREA	PPB
UNKNOWN	1	10.1	0.0	US
UNKNOWN	2	10.3	1.0	US
UNKNOWN	3	11.1	0.2	US
UNKNOWN	4	11.3	0.2	US
UNKNOWN	5	11.5	0.2	US
UNKNOWN	6	11.7	0.2	US
UNKNOWN	7	11.9	0.2	US
UNKNOWN	8	12.1	0.2	US
UNKNOWN	9	12.3	0.2	US
UNKNOWN	10	12.5	0.2	US
UNKNOWN	11	12.7	0.2	US
UNKNOWN	12	12.9	0.2	US
UNKNOWN	13	13.1	0.2	US
UNKNOWN	14	13.3	0.2	US
UNKNOWN	15	13.5	0.2	US

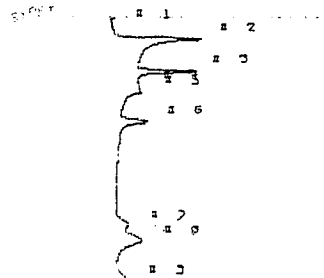
# PHOTOVAC



STEP 3 100.0  
 SAMPLE LIBRARY 1 JUL 14 1934 12:15  
 ANALYSIS # 17 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 021-020 6.5-7.0

COMPOUND NAME	PEAK	RT	AREA	PPB
UNKNOWN	1	10.1	0.0	US
UNKNOWN	2	10.3	1.0	US
UNKNOWN	3	10.5	0.2	US
UNKNOWN	4	10.7	0.2	US
UNKNOWN	5	10.9	0.2	US
UNKNOWN	6	11.1	0.2	US
UNKNOWN	7	11.3	0.2	US
UNKNOWN	8	11.5	0.2	US
UNKNOWN	9	11.7	0.2	US
UNKNOWN	10	11.9	0.2	US

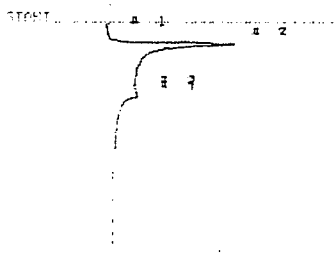
# PHOTOVAC



STEP 4 100.0  
 SAMPLE LIBRARY 1 JUL 14 1934 12:16  
 ANALYSIS # 13 J BYRD, JR.  
 INTERNAL TEMP 32 DULUTH ANG  
 GAIN 5 100 PPBP

COMPOUND NAME	PEAK	RT	AREA	PPB
UNKNOWN	1	10.1	0.0	US
UNKNOWN	2	10.3	1.0	US
UNKNOWN	3	10.5	0.2	US
UNKNOWN	4	10.7	0.2	US
UNKNOWN	5	10.9	0.2	US
UNKNOWN	6	11.1	0.2	US
UNKNOWN	7	11.3	0.2	US
UNKNOWN	8	11.5	0.2	US
UNKNOWN	9	11.7	0.2	US
UNKNOWN	10	11.9	0.2	US

# PHOTOVAC



STEP 5 100.0  
 SAMPLE LIBRARY 1 JUL 14 1934 12:26  
 ANALYSIS # 13 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 021-020 1.5-2.0

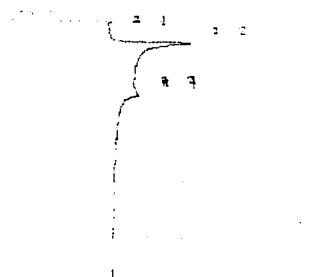
COMPOUND NAME	PEAK	RT	AREA	PPB
UNKNOWN	1	10.1	0.0	US
UNKNOWN	2	10.3	1.0	US
UNKNOWN	3	10.5	0.2	US
UNKNOWN	4	10.7	0.2	US
UNKNOWN	5	10.9	0.2	US
UNKNOWN	6	11.1	0.2	US
UNKNOWN	7	11.3	0.2	US
UNKNOWN	8	11.5	0.2	US
UNKNOWN	9	11.7	0.2	US
UNKNOWN	10	11.9	0.2	US

# PHOTOVAC

CALIBRATED PEAK 0, BENZENE  
 SAMPLE LIBRARY 1 JUL 14 1934 12:27  
 ANALYSIS # 13 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 100 PPBP

COMPOUND NAME	PEAK	RT	AREA	PPB
UNKNOWN	1	10.1	0.0	US
UNKNOWN	2	10.3	1.0	US
UNKNOWN	3	10.5	0.2	US
UNKNOWN	4	10.7	0.2	US
UNKNOWN	5	10.9	0.2	US
UNKNOWN	6	11.1	0.2	US
UNKNOWN	7	11.3	0.2	US
UNKNOWN	8	11.5	0.2	US
UNKNOWN	9	11.7	0.2	US
UNKNOWN	10	11.9	0.2	US

# PHOTOVAC



STEP 6 100.0  
 SAMPLE LIBRARY 1 JUL 14 1934 12:4  
 ANALYSIS # 13 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 021-022 1.5-2.0

COMPOUND NAME	PEAK	RT	AREA	PPB
UNKNOWN	1	10.1	0.0	US
UNKNOWN	2	10.3	1.0	US
UNKNOWN	3	10.5	0.2	US
UNKNOWN	4	10.7	0.2	US
UNKNOWN	5	10.9	0.2	US
UNKNOWN	6	11.1	0.2	US
UNKNOWN	7	11.3	0.2	US
UNKNOWN	8	11.5	0.2	US
UNKNOWN	9	11.7	0.2	US
UNKNOWN	10	11.9	0.2	US



# PHOTOVAC

STEP 1 15:52  
SAMPLE LIBRARY 1 JUL 14 1994 19:52  
ANALYSIS # 28 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG5  
GAIN 5 021-016 2.0-2.5  
COMPONENT NAME PEAK INT. AREA  
BENZENE 1 100.0 100.0

# PHOTOVAC

STEP 1 15:52  
SAMPLE LIBRARY 1 JUL 14 1994 15:52  
ANALYSIS # 29 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG5  
GAIN 5 021-016 6.5-7.0  
COMPONENT NAME PEAK INT. AREA  
BENZENE 1 100.0 100.0

# PHOTOVAC

STEP 1 15:20  
SAMPLE LIBRARY 1 JUL 14 1994 15:20  
ANALYSIS # 30 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG5  
GAIN 5 021-016 10.5-11  
COMPONENT NAME PEAK INT. AREA  
BENZENE 1 100.0 100.0

# PHOTOVAC

STEP 1 15:20  
SAMPLE LIBRARY 1 JUL 14 1994 15:20  
ANALYSIS # 31 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG5  
GAIN 5 021-016 6.5-7.0  
COMPONENT NAME PEAK INT. AREA  
BENZENE 1 100.0 100.0

# PHOTOVAC

STEP 1 15:20  
SAMPLE LIBRARY 1 JUL 14 1994 15:20  
ANALYSIS # 32 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG5  
GAIN 5 021-016 10.5-11  
COMPONENT NAME PEAK INT. AREA  
BENZENE 1 100.0 100.0

# PHOTOVAC

STEP 1 15:20  
SAMPLE LIBRARY 1 JUL 14 1994 15:20  
ANALYSIS # 33 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG5  
GAIN 5 100 PPS  
COMPONENT NAME PEAK INT. AREA  
BENZENE 1 100.0 100.0  
BENZENE 2 100.0 100.0  
BENZENE 3 100.0 100.0  
BENZENE 4 100.0 100.0  
BENZENE 5 100.0 100.0

# PHOTOVAC

CALIBRATED PEAK 3, BENZENE  
SAMPLE LIBRARY 1 JUL 14 1994 15:54  
ANALYSIS # 33 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG5  
GAIN 5 100 PPS  
COMPONENT NAME PEAK INT. AREA  
BENZENE 1 100.0 100.0  
BENZENE 2 100.0 100.0  
BENZENE 3 100.0 100.0  
BENZENE 4 100.0 100.0  
BENZENE 5 100.0 100.0

# PHOTOVAC

STEP 1 15:20  
SAMPLE LIBRARY 1 JUL 14 1994 16:16  
ANALYSIS # 34 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG5  
GAIN 5 100 PPS  
COMPONENT NAME PEAK INT. AREA  
BENZENE 1 100.0 100.0  
BENZENE 2 100.0 100.0  
BENZENE 3 100.0 100.0  
BENZENE 4 100.0 100.0  
BENZENE 5 100.0 100.0

# PHOTOVAC

1	CONFOUND	ID #	R.T.	LIMIT
BENZENE	1	01.5	100.0 PFB	
TOLUENE	2	150.7	100.0 PFB	
E-BENZENE	3	310.2	100.0 PFB	
MP-XYLENE	4	341.6	100.0 PFB	

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 14 1994 16:19  
ANALYSIS # 35 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGOS  
GAIN 5 ~~100 PFB~~ **41R B+NR**

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 14 1994 17:19  
ANALYSIS # 36 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGOS  
GAIN 5 021-015 1.5-2.0

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 14 1994 17:19  
ANALYSIS # 37 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGOS  
GAIN 5 021-015 6.5-7.0

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 14 1994 17:20  
ANALYSIS # 38 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGOS  
GAIN 5 021-015 10.5-11

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 14 1994 17:42  
ANALYSIS # 39 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGOS  
GAIN 5 021-015 13-13.5

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 14 1994 17:51  
ANALYSIS # 40 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGOS  
GAIN 5 100 PFB

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 14 1994 17:52  
ANALYSIS # 41 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGOS  
GAIN 5 100 PFB

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 14 1994 19:4  
ANALYSIS # 41 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGOS  
GAIN 5 AIR

# PHOTOVAC

JUL 15 1994 3:20

FIELD: 30  
POWER: 44

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

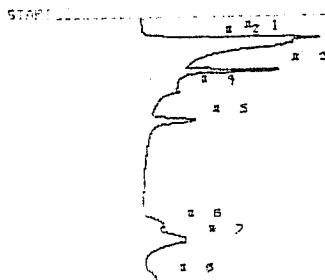
# PHOTOVAC

1 CONFOUND ID # R.T. LIMIT

BENZENE	1	80.1	100.0	PPB
TOLUENE	2	155.3	100.0	PPB
ETHYLBENZENE	3	311.6	100.0	PPB
MP-XYLENE	4	324.4	100.0	PPB

# PHOTOVAC

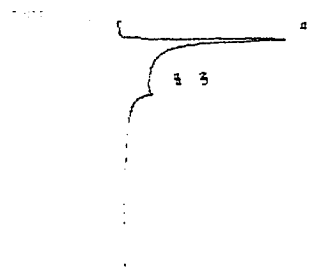
# PHOTOVAC



STEP 1 100.0  
SAMPLE LIBRARY 1 JUL 15 1994 9:00  
ANALYSIS # 1 J BYRD, JR.  
INTERNAL TEMP 23 DULUTH ANGOS  
GAIN 5 100 PPB

CONFOUND NAME PEAK LIMIT  
BENZENE 1 80.1 100.0 PPB  
TOLUENE 2 155.3 100.0 PPB  
ETHYLBENZENE 3 311.6 100.0 PPB  
MP-XYLENE 4 324.4 100.0 PPB

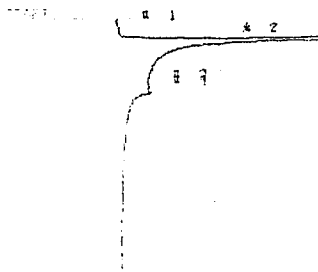
# PHOTOVAC



STEP 1 100.0  
SAMPLE LIBRARY 1 JUL 15 1994 3:59  
ANALYSIS # 3 J BYRD, JR.  
INTERNAL TEMP 30 DULUTH ANGOS  
GAIN 5 AIR

CONFOUND NAME PEAK LIMIT  
BENZENE 1 80.1 100.0 PPB  
TOLUENE 2 155.3 100.0 PPB  
ETHYLBENZENE 3 311.6 100.0 PPB  
MP-XYLENE 4 324.4 100.0 PPB

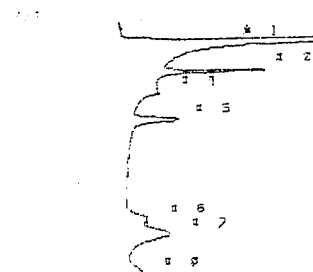
# PHOTOVAC



STEP 1 100.0  
SAMPLE LIBRARY 1 JUL 15 1994 10:56  
ANALYSIS # 6 J BYRD, JR.  
INTERNAL TEMP 31 DULUTH ANGOS  
GAIN 5 021-012 10.5-11

CONFOUND NAME PEAK LIMIT  
BENZENE 1 80.1 100.0 PPB  
TOLUENE 2 155.3 100.0 PPB  
ETHYLBENZENE 3 311.6 100.0 PPB  
MP-XYLENE 4 324.4 100.0 PPB

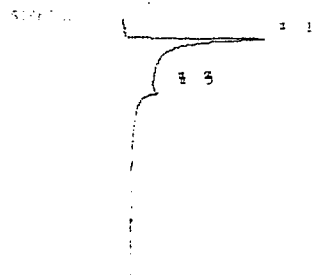
# PHOTOVAC



STEP 1 100.0  
SAMPLE LIBRARY 1 JUL 15 1994 9:45  
ANALYSIS # 2 J BYRD, JR.  
INTERNAL TEMP 30 DULUTH ANGOS  
GAIN 5 100 PPB

CONFOUND NAME PEAK LIMIT  
BENZENE 1 80.1 100.0 PPB  
TOLUENE 2 155.3 100.0 PPB  
ETHYLBENZENE 3 311.6 100.0 PPB  
MP-XYLENE 4 324.4 100.0 PPB

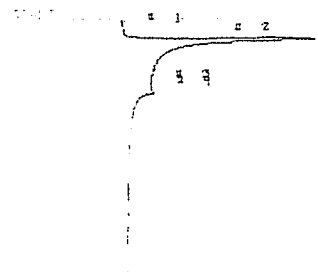
# PHOTOVAC



STEP 1 100.0  
SAMPLE LIBRARY 1 JUL 15 1994 10:35  
ANALYSIS # 4 J BYRD, JR.  
INTERNAL TEMP 31 DULUTH ANGOS  
GAIN 5 021-012 2.0-2.5

CONFOUND NAME PEAK LIMIT  
BENZENE 1 80.1 100.0 PPB  
TOLUENE 2 155.3 100.0 PPB  
ETHYLBENZENE 3 311.6 100.0 PPB  
MP-XYLENE 4 324.4 100.0 PPB

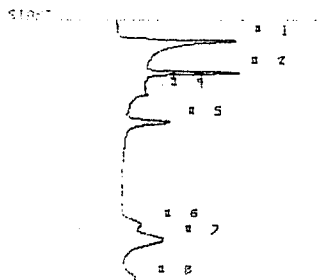
# PHOTOVAC



STEP 1 100.0  
SAMPLE LIBRARY 1 JUL 15 1994 11:17  
ANALYSIS # 2 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANGOS  
GAIN 5 021-012 14.5-15

CONFOUND NAME PEAK LIMIT  
BENZENE 1 80.1 100.0 PPB  
TOLUENE 2 155.3 100.0 PPB  
ETHYLBENZENE 3 311.6 100.0 PPB  
MP-XYLENE 4 324.4 100.0 PPB

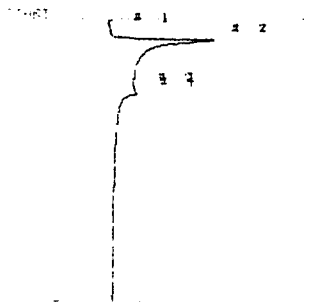
# PHOTOVAC



TEMP 7 100.0  
SAMPLE LIBRARY 1 JUL 15 1994 11:31  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 5 100 PPB

CONCENTRATION NAME PEAK 1 2 3 4 5 6 7  
100.0 PPB  
100.1 PPB

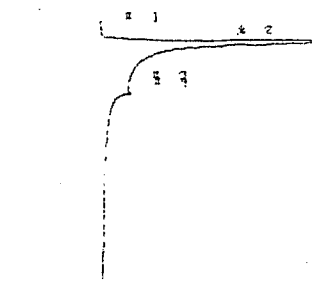
# PHOTOVAC



TEMP 7 100.0  
SAMPLE LIBRARY 1 JUL 15 1994 12:47  
ANALYSIS # 10 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 5 021-026NW 2-2.5

CONCENTRATION NAME PEAK 1 2 3 4 5 6 7

# PHOTOVAC



TEMP 7 100.0  
SAMPLE LIBRARY 1 JUL 15 1994 13:16  
ANALYSIS # 13 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 5 021-026NW 16.5-17

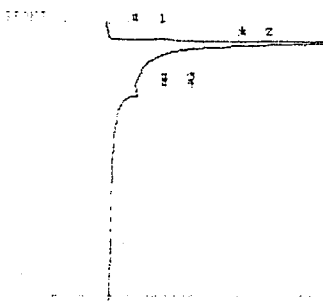
CONCENTRATION NAME PEAK 1 2 3 4 5 6 7

# PHOTOVAC

CALCULATED PEAK 2, BENTENE  
SAMPLE LIBRARY 1 JUL 15 1994 11:32  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 5 100 PPB

CONCENTRATION NAME PEAK 1 2 3 4 5 6 7  
100.0 PPB  
100.6 PPB  
117.5 PPB  
217.3 PPB

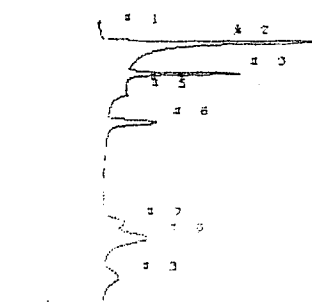
# PHOTOVAC



TEMP 7 100.0  
SAMPLE LIBRARY 1 JUL 15 1994 12:57  
ANALYSIS # 11 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 5 021-026NW 8.5-9

CONCENTRATION NAME PEAK 1 2 3 4 5 6 7

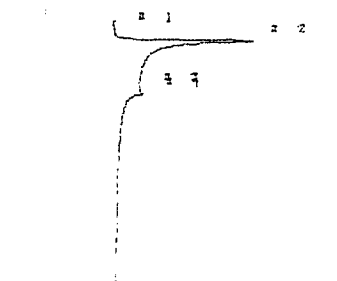
# PHOTOVAC



TEMP 7 100.0  
SAMPLE LIBRARY 1 JUL 15 1994 13:26  
ANALYSIS # 14 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 5 100 PPB

CONCENTRATION NAME PEAK 1 2 3 4 5 6 7  
114.2 PPB  
116.2 PPB  
120.0 PPB  
227.6 PPB

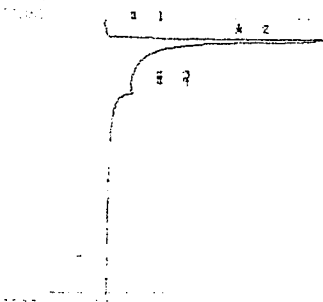
# PHOTOVAC



TEMP 7 100.0  
SAMPLE LIBRARY 1 JUL 15 1994 11:42  
ANALYSIS # 9 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 5 AIR

CONCENTRATION NAME PEAK 1 2 3 4 5 6 7

# PHOTOVAC



TEMP 7 100.0  
SAMPLE LIBRARY 1 JUL 15 1994 13:7  
ANALYSIS # 12 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 5 021-026NW 11-11.5

CONCENTRATION NAME PEAK 1 2 3 4 5 6 7

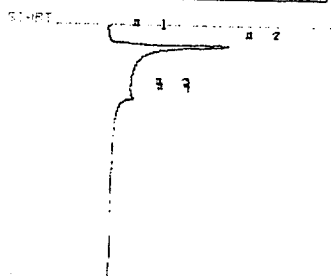
# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 15 1934 13:28  
ANALYSIS # 14 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGSS  
GAIN 5 100 PFB

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	21.8	6.5 MC
BENZENE	3	20.1	100.0 PFB
TOLUENE	4	186.3	101.3 PFB
BROMOBENZENE	5	212.2	194.1 PFB

# PHOTOVAC



100.0 PFB  
SAMPLE LIBRARY 1 JUL 15 1934 13:38  
ANALYSIS # 15 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGSS  
GAIN 5 AIR

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	20.1	100.0 PFB

# PHOTOVAC

JUL 18 1994 8:3

FIELD: 30  
POWER: 44

SAMPLE	8.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

COMPOUND	ID #	R.T.	LIMIT
BENZENE	1	77.7	100.0 PFB
TOLUENE	2	150.3	100.0 PFB
ETHYLBENZENE	3	300.5	100.0 PFB
M-XYLENE	4	105.4	100.0 PFB

# PHOTOVAC

START 1 2

8 7  
x 5

STOP 8 450.3  
SAMPLE LIBRARY 1 JUL 18 1994 11:49  
ANALYSIS # 5 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 017-0168H 1-5-2

COMPOUND NAME PEAK R.T. AREA-PPM  
UNKNOWN 2 31.1 3.5 05

# PHOTOVAC

START 1 2

x 1  
x 2  
x 3  
x 4

x 5  
x 6  
x 7

STOP 8 450.3  
SAMPLE LIBRARY 1 JUL 18 1994 10:19  
ANALYSIS # 1 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 2 100 PFB

COMPOUND NAME PEAK R.T. AREA-PPM  
UNKNOWN 1 21.0 425.1 PFB  
BENZENE 2 77.6 60.10 PFB  
TOLUENE 3 150.7 100.10 PFB  
ETHYLBENZENE 4 300.5 100.10 PFB  
M-XYLENE 5 105.4 200.3 PFB  
UNKNOWN 6 300.5 201.9 PFB

# PHOTOVAC

START 1 2

8 7

STOP 8 450.3  
SAMPLE LIBRARY 1 JUL 18 1994 11:2  
ANALYSIS # 3 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 AIR

COMPOUND NAME PEAK R.T. AREA-PPM  
UNKNOWN 2 31.2 4.5 05

# PHOTOVAC

START 1 2

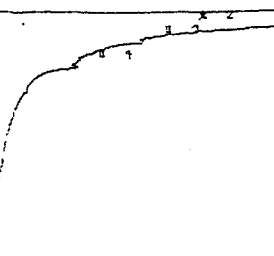
8 8

STOP 8 450.3  
SAMPLE LIBRARY 1 JUL 18 1994 11:54  
ANALYSIS # 6 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 017-0168H 5.5-6

COMPOUND NAME PEAK R.T. AREA-PPM  
UNKNOWN 1 21.0 425.1 PFB

# PHOTOVAC

START 1 2

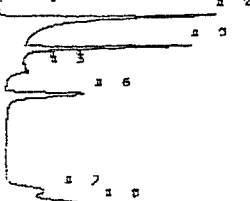


STOP 8 450.3  
SAMPLE LIBRARY 1 JUL 18 1994 11:15  
ANALYSIS # 4 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 AIR

COMPOUND NAME PEAK R.T. AREA-PPM  
UNKNOWN 1 21.0 425.1 PFB

# PHOTOVAC

START 1 2



STOP 8 450.3  
SAMPLE LIBRARY 1 JUL 18 1994 10:53  
ANALYSIS # 2 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 100 PFB

COMPOUND NAME PEAK R.T. AREA-PPM  
UNKNOWN 1 21.0 425.1 PFB  
BENZENE 2 77.6 60.10 PFB  
TOLUENE 3 150.7 100.10 PFB  
ETHYLBENZENE 4 300.5 100.10 PFB  
M-XYLENE 5 105.4 200.3 PFB  
UNKNOWN 6 300.5 201.9 PFB

# PHOTOVAC

START 1 2

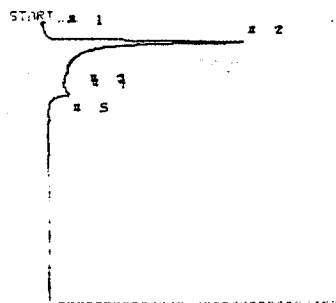
8 8

STOP 8 450.3  
SAMPLE LIBRARY 1 JUL 18 1994 12:12  
ANALYSIS # 7 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 017-0168H 5.5-10

COMPOUND NAME PEAK R.T. AREA-PPM  
UNKNOWN 1 21.0 425.1 PFB



# PHOTOVAC



STOP 1 100.0  
 SAMPLE LIBRARY 1 JUL 18 1994 12:36  
 ANALYSIS # 8 J BYRD, JR.  
 INTERNAL TEMP 35 DULUTH ANG  
 GAIN 10 012-015BH 1-1.5

COMPOUND NAME PEAK R.T. AREA  
 UNKNOWN 2 01.1 4.5 1.5

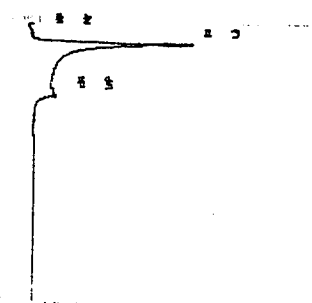
# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 18 1994 12:58  
 ANALYSIS # 10 J BYRD, JR.  
 INTERNAL TEMP 35 DULUTH ANG  
 GAIN 10 100 PFB

COMPOUND NAME PEAK R.T. AREA  
 UNKNOWN 1 00.3 7.4 1.0  
 BENZENE 2 01.6 100.0 PFB  
 TOLUENE 3 02.3 100.0 PFB  
 ETHYLBENZENE 4 03.5 100.0 PFB  
 N-XYLENE 5 04.2 112.0 PFB

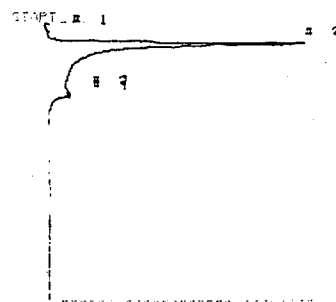
# PHOTOVAC



STOP 1 100.0  
 SAMPLE LIBRARY 1 JUL 18 1994 13:20  
 ANALYSIS # 12 J BYRD, JR.  
 INTERNAL TEMP 35 DULUTH ANG  
 GAIN 10 AIR

COMPOUND NAME PEAK R.T. AREA  
 UNKNOWN 2 01.1 4.5 1.5

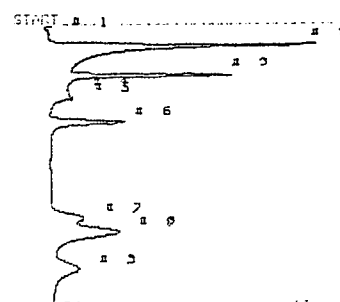
# PHOTOVAC



STOP 1 100.0  
 SAMPLE LIBRARY 1 JUL 18 1994 12:46  
 ANALYSIS # 9 J BYRD, JR.  
 INTERNAL TEMP 35 DULUTH ANG  
 GAIN 10 012-015BH 5.5-6

COMPOUND NAME PEAK R.T. AREA  
 UNKNOWN 1 00.3 7.4 1.0

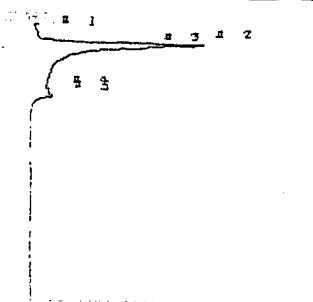
# PHOTOVAC



STOP 1 100.0  
 SAMPLE LIBRARY 1 JUL 18 1994 13: 9  
 ANALYSIS # 11 J BYRD, JR.  
 INTERNAL TEMP 35 DULUTH ANG  
 GAIN 10 100 PFB

COMPOUND NAME PEAK R.T. AREA  
 UNKNOWN 1 00.3 7.4 1.0  
 BENZENE 2 01.6 100.0 PFB  
 TOLUENE 3 02.3 100.0 PFB  
 ETHYLBENZENE 4 03.5 100.0 PFB  
 N-XYLENE 5 04.2 112.0 PFB

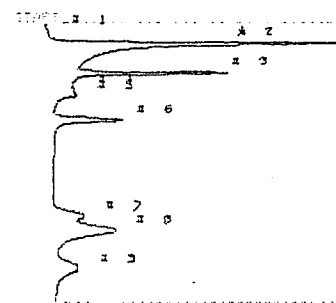
# PHOTOVAC



STOP 1 100.0  
 SAMPLE LIBRARY 1 JUL 18 1994 13:28  
 ANALYSIS # 13 J BYRD, JR.  
 INTERNAL TEMP 35 DULUTH ANG  
 GAIN 10 012-015BH 5.5-6

COMPOUND NAME PEAK R.T. AREA  
 UNKNOWN 1 00.3 7.4 1.0

# PHOTOVAC



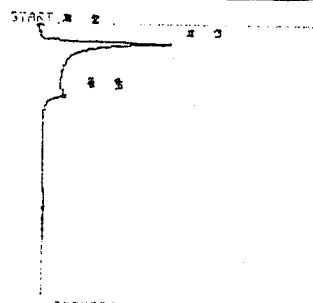
STOP 1 100.0  
 SAMPLE LIBRARY 1 JUL 18 1994 12:56  
 ANALYSIS # 10 J BYRD, JR.  
 INTERNAL TEMP 35 DULUTH ANG  
 GAIN 10 100 PFB

COMPOUND NAME PEAK R.T. AREA  
 UNKNOWN 1 00.3 7.4 1.0  
 BENZENE 2 01.6 100.0 PFB  
 TOLUENE 3 02.3 100.0 PFB  
 ETHYLBENZENE 4 03.5 100.0 PFB  
 N-XYLENE 5 04.2 112.0 PFB

# PHOTOVAC

1	COMPOUND	ID #	R.T.	LIMIT
BENZENE	1	22.6	100.0 PFB	
TOLUENE	2	150.3	100.0 PFB	
ETHYLBENZENE	3	300.0	100.0 PFB	
N-XYLENE	4	323.0	100.0 PFB	

# PHOTOVAC



STOP 1 100.0  
 SAMPLE LIBRARY 1 JUL 18 1994 14:43  
 ANALYSIS # 14 J BYRD, JR.  
 INTERNAL TEMP 35 DULUTH ANG  
 GAIN 10 012-015BH 5-5.5

COMPOUND NAME PEAK R.T. AREA  
 UNKNOWN 1 00.3 7.4 1.0

# PHOTOVAC

START 1 1 2

1 3

STOP 1 150.0  
SAMPLE LIBRARY 1 JUL 18 1994 14:52  
ANALYSIS # 15 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGUS  
GAIN 10 012-0138H 5.5-6

COMPOUND NAME PEAK R.T. AREA

UNKNOWN 1 150.0 1.5 100  
UNKNOWN 2 150.0 1.5 100

# PHOTOVAC

START 1 1 2

1 3

A-BOT

SAMPLE LIBRARY 1 JUL 18 1994 15:33  
ANALYSIS # 16 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGUS  
GAIN 10 012-0138H 5.5-10

COMPOUND NAME PEAK R.T. AREA

UNKNOWN 1 150.0 1.5 100

SAMPLE LIBRARY 1 JUL 18 1994 15:35  
ANALYSIS # 17 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGUS  
GAIN 10 012-0138H 2.5-10

COMPOUND NAME PEAK R.T. AREA

UNKNOWN 1 150.0 1.5 100

# PHOTOVAC

START 1 1 2

1 3

STOP 1 150.0  
SAMPLE LIBRARY 1 JUL 18 1994 15:21  
ANALYSIS # 16 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGUS  
GAIN 10 012-0138H 2-2.5

COMPOUND NAME PEAK R.T. AREA

UNKNOWN 1 150.0 1.5 100

# PHOTOVAC

START 1 1 2

1 3

SAMPLE LIBRARY 1 JUL 18 1994 15:44  
ANALYSIS # 18 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGUS  
GAIN 10 012-0138H 3.5-10

COMPOUND NAME PEAK R.T. AREA

UNKNOWN 1 150.0 1.5 100

# PHOTOVAC

START 1 1 2

1 3

1 6

1 7

1 3

STOP 1 150.0  
SAMPLE LIBRARY 1 JUL 18 1994 15:53  
ANALYSIS # 19 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGUS  
GAIN 10 100 FFB

COMPOUND NAME PEAK R.T. AREA

UNKNOWN 1 150.0 1.5 100  
UNKNOWN 2 150.0 1.5 100  
UNKNOWN 3 150.0 1.5 100  
UNKNOWN 4 150.0 1.5 100  
UNKNOWN 5 150.0 1.5 100

# PHOTOVAC

CALIBRATED PEAK 3, PENTENE

SAMPLE LIBRARY 1 JUL 18 1994 15:54  
ANALYSIS # 19 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANGUS  
GAIN 10 100 FFB

COMPOUND NAME PEAK R.T. AREA

UNKNOWN 1 150.0 1.5 100  
UNKNOWN 2 150.0 1.5 100  
UNKNOWN 3 150.0 1.5 100  
UNKNOWN 4 150.0 1.5 100  
UNKNOWN 5 150.0 1.5 100

# PHOTOVAC

START 1 1 2

1 3

SAMPLE LIBRARY 1 JUL 18 1994 16: 6  
ANALYSIS # 20 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANGUS  
GAIN 10 AIR

COMPOUND NAME PEAK R.T. AREA

UNKNOWN 1 150.0 1.5 100

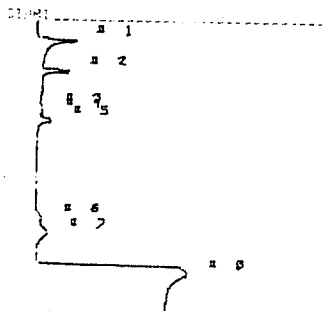
# PHOTOVAC

JUL 13 1994 2:20

FIELD: 30  
POWER: 42

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

# PHOTOVAC



STOP 8 450.0  
SAMPLE LIBRARY 1 JUL 13 1994 9:28  
ANALYSIS # 2 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 100 PPB

COMPOUND NAME PEAK # T. RETENTION

COMPOUND	1	2	5	6	7	8
BENZENE	1	2	5	6	7	8
TOLUENE	1	2	5	6	7	8
E-BENZENE	1	2	5	6	7	8
PF-XYLENE	1	2	5	6	7	8

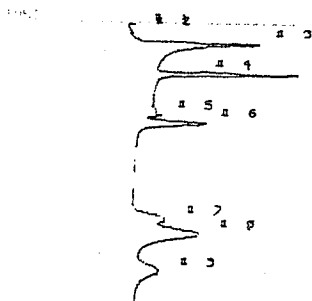
# PHOTOVAC

JUL 13 1994 2:23

FIELD: 30  
POWER: 43

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

# PHOTOVAC

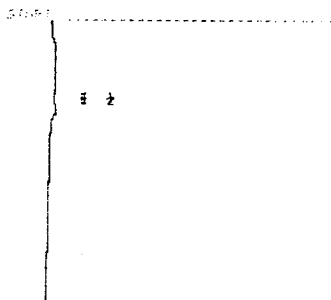


STOP 8 450.0  
SAMPLE LIBRARY 1 JUL 13 1994 9:30  
ANALYSIS # 3 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 100 PPB

COMPOUND NAME PEAK # T. RETENTION

COMPOUND	1	2	3	4	5	6	7	8
BENZENE	1	2	3	4	5	6	7	8
TOLUENE	1	2	3	4	5	6	7	8
E-BENZENE	1	2	3	4	5	6	7	8
PF-XYLENE	1	2	3	4	5	6	7	8

# PHOTOVAC



STOP 8 450.0  
SAMPLE LIBRARY 1 JUL 13 1994 2:32  
ANALYSIS # 1 J BYRD, JR.  
INTERNAL TEMP 25 DULUTH ANG  
GAIN 2 AIR

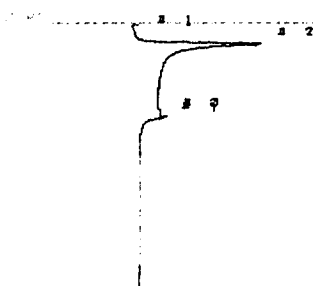
COMPOUND NAME PEAK # T. RETENTION

# PHOTOVAC

1 COMPOUND -ID # P.T. LIMIT

COMPOUND	1	2	3	4
BENZENE	1	20.6	100.0	PPB
TOLUENE	2	156.3	100.0	PPB
E-BENZENE	3	307.4	100.0	PPB
PF-XYLENE	4	323.6	100.0	PPB

# PHOTOVAC

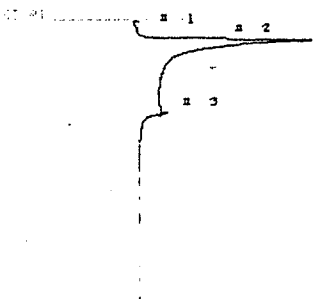


STOP 8 450.0  
SAMPLE LIBRARY 1 JUL 13 1994 9:51  
ANALYSIS # 4 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 AIR

COMPOUND NAME PEAK # T. RETENTION

COMPOUND NAME PEAK # T. RETENTION

# PHOTOVAC

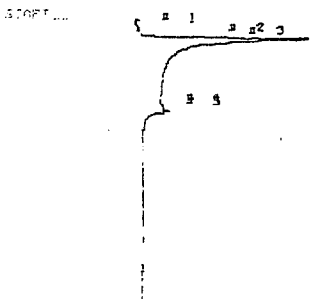


STOP 8 450.0  
SAMPLE LIBRARY 1 JUL 13 1994 10:3  
ANALYSIS # 5 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 012-0148H 2-2.5

COMPOUND NAME PEAK # T. RETENTION

COMPOUND NAME PEAK # T. RETENTION

# PHOTOVAC



STOP 8 450.0  
SAMPLE LIBRARY 1 JUL 13 1994 10:14  
ANALYSIS # 6 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 012-0148H 4.5-5

COMPOUND NAME PEAK # T. RETENTION

COMPOUND NAME PEAK # T. RETENTION

# PHOTOVAC

STOP # 480.1  
SAMPLE LIBRARY 1 JUL 13 1994 10:05  
ANALYSIS # 10 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 012-012BH 5.5-10

COMPOUND NAME TEMP T.M. RESIDUAL  
BENZENE 100.0 100.0  
TOLUENE 156.1 100.0  
E-BENZENE 302.0 100.0  
P-XYLENE 323.2 100.0  
D-XYLENE 305.3 100.0

# PHOTOVAC

STOP # 480.1

SAMPLE LIBRARY 1 JUL 13 1994 10:52  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 012-012BH 2-2.5

COMPOUND NAME TEMP T.M. RESIDUAL  
BENZENE 100.0 100.0  
TOLUENE 156.1 100.0  
E-BENZENE 302.0 100.0  
P-XYLENE 323.2 100.0  
D-XYLENE 305.3 100.0

# PHOTOVAC

STOP # 480.1

SAMPLE LIBRARY 1 JUL 13 1994 11:2  
ANALYSIS # 9 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 012-012BH 5.5-6

COMPOUND NAME TEMP T.M. RESIDUAL  
BENZENE 100.0 100.0  
TOLUENE 156.1 100.0  
E-BENZENE 302.0 100.0  
P-XYLENE 323.2 100.0  
D-XYLENE 305.3 100.0

# PHOTOVAC

STOP # 480.1

SAMPLE LIBRARY 1 JUL 13 1994 11:13  
ANALYSIS # 10 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 100 PPB

COMPOUND NAME TEMP T.M. RESIDUAL  
BENZENE 100.0 100.0  
TOLUENE 156.1 100.0  
E-BENZENE 302.0 100.0  
P-XYLENE 323.2 100.0  
D-XYLENE 305.3 100.0

# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 13 1994 11:14  
ANALYSIS # 10 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 100 PPB

COMPOUND NAME TEMP T.M. RESIDUAL  
BENZENE 100.0 100.0  
TOLUENE 156.1 100.0  
E-BENZENE 302.0 100.0  
P-XYLENE 323.2 100.0  
D-XYLENE 305.3 100.0

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

COMPOUND	ID #	R.T.	LIMIT
BENZENE	1	70.5	100.0 PPB
TOLUENE	2	156.1	100.0 PPB
E-BENZENE	3	302.0	100.0 PPB
P-XYLENE	4	323.2	100.0 PPB
D-XYLENE	5	305.3	100.0 PPB

# PHOTOVAC

STOP # 480.1

SAMPLE LIBRARY 1 JUL 13 1994 11:26  
ANALYSIS # 11 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 AIR

COMPOUND NAME TEMP T.M. RESIDUAL  
BENZENE 100.0 100.0  
TOLUENE 156.1 100.0  
E-BENZENE 302.0 100.0  
P-XYLENE 323.2 100.0  
D-XYLENE 305.3 100.0

# PHOTOVAC

STOP # 480.1

SAMPLE LIBRARY 1 JUL 13 1994 11:40  
ANALYSIS # 12 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 012-012BH 5.5-10

COMPOUND NAME TEMP T.M. RESIDUAL  
BENZENE 100.0 100.0  
TOLUENE 156.1 100.0  
E-BENZENE 302.0 100.0  
P-XYLENE 323.2 100.0  
D-XYLENE 305.3 100.0

# PHOTOVAC

STOP # 480.1

SAMPLE LIBRARY 1 JUL 13 1994 11:50  
ANALYSIS # 13 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 012-012BH 2-2.5

COMPOUND NAME TEMP T.M. RESIDUAL  
BENZENE 100.0 100.0  
TOLUENE 156.1 100.0  
E-BENZENE 302.0 100.0  
P-XYLENE 323.2 100.0  
D-XYLENE 305.3 100.0

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 12:1  
ANALYSIS # 14 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 017-0118H 3.5-6

# PHOTOVAC

CALIBRATED PEAK 3, PENZENE

SAMPLE LIBRARY 1 JUL 13 1994 12:53  
ANALYSIS # 16 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PFB

100.0 PFB  
150.1 PFB

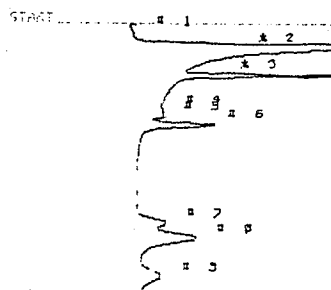
# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 13:18  
ANALYSIS # 18 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 AIR

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 12:10  
ANALYSIS # 15 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 017-0118H 3.5-10

# PHOTOVAC



STOP 6 450.0  
SAMPLE LIBRARY 1 JUL 13 1994 13:4  
ANALYSIS # 17 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PFB

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 13:53  
ANALYSIS # 19 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 017-0108H 4.5-5

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 12:51  
ANALYSIS # 16 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PFB

# PHOTOVAC

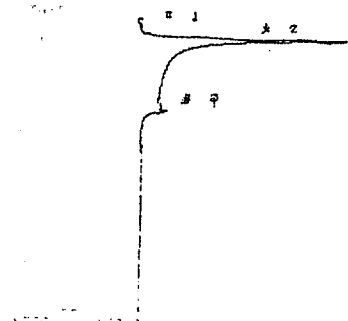
1	COMPOUND	ID #	R.T.	LIMIT
BENZENE	1	20.0	100.0 PFB	
TOLUENE	2	157.3	100.0 PFB	
E-BENZENE	3	311.0	100.0 PFB	
NP-XYLENE	1	333.0	100.0 PFB	

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 14:53  
ANALYSIS # 20 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 017-0108H 3.5-10

116.2 PFB  
100.2 PFB  
101.3 PFB  
102.1 PFB

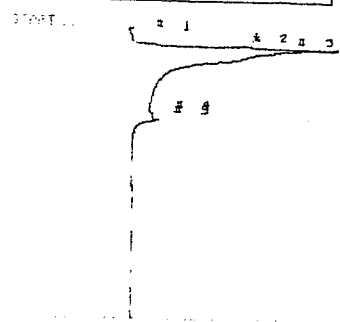
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 13 1994 15:3  
ANALYSIS # 21 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 017-017BH 1.5-2

110.3 FPD  
115.0 FPD  
130.3 FPD

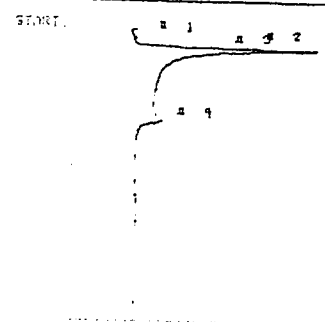
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 13 1994 15:18  
ANALYSIS # 22 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 017-017BH 5.5-6

100.0 FPD  
101.6 FPD  
106.5 FPD

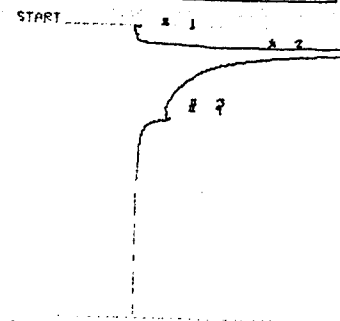
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 13 1994 15:40  
ANALYSIS # 23 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 017-017BH 3.5-10

100.0 FPD  
101.6 FPD  
106.5 FPD

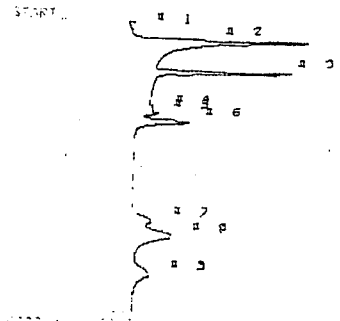
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 13 1994 16:3  
ANALYSIS # 25 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 AIR

100.0 FPD  
101.6 FPD  
106.5 FPD

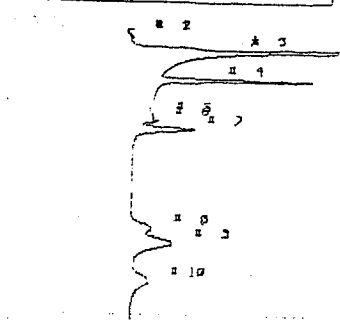
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 13 1994 15:54  
ANALYSIS # 24 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 100 FPD

100.0 FPD  
101.6 FPD  
106.5 FPD

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 13 1994 16:18  
ANALYSIS # 26 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 100 FPD

100.0 FPD  
101.6 FPD  
106.5 FPD

# PHOTOVAC

CALIBRATED PEAK 3, BENZENE  
SAMPLE LIBRARY 1 JUL 13 1994 15:58  
ANALYSIS # 24 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 100 FPD

100.0 FPD  
101.6 FPD  
106.5 FPD

# PHOTOVAC

CALIBRATED PEAK 1, BENZENE  
SAMPLE LIBRARY 1 JUL 13 1994 16:19  
ANALYSIS # 26 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 100 FPD

100.0 FPD  
101.6 FPD  
106.5 FPD

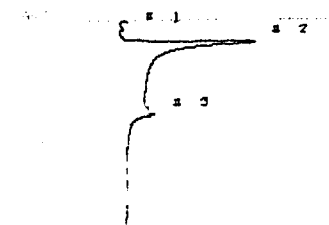
# PHOTOVAC

JUL 20 1994 10:33

FIELD: 30  
POWER: 43

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	130.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

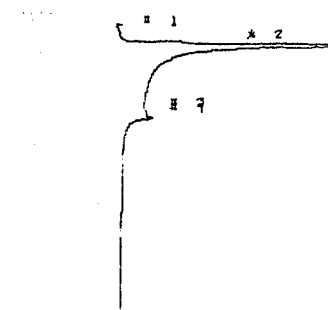
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 11:21  
ANALYSIS # 2 J BYRD, JR.  
INTERNAL TEMP 31 DULUTH ANG  
GAIN 10 AIR

COMPOUND NAME FROM AIR, WATER, SOIL  
AIR SOIL  
WATER SOIL

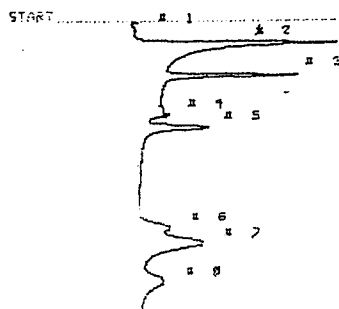
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 11:57  
ANALYSIS # 4 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 017-0180H 2-2.5

COMPOUND NAME FROM AIR, WATER, SOIL  
AIR SOIL  
WATER SOIL

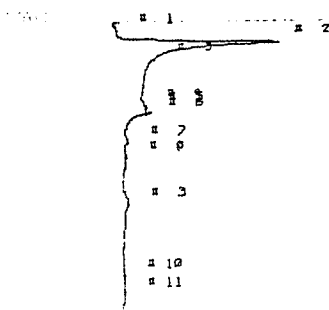
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 11:3  
ANALYSIS # 1 J BYRD, JR.  
INTERNAL TEMP 23 DULUTH ANG  
GAIN 10 PFB

COMPOUND NAME FROM AIR, WATER, SOIL  
AIR SOIL  
WATER SOIL

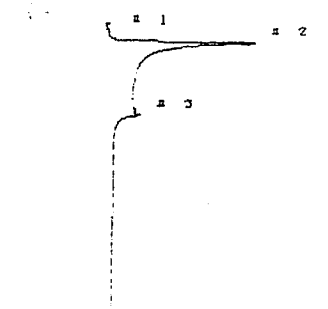
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 11:46  
ANALYSIS # 3 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 017-0180H 2-2.5

COMPOUND NAME FROM AIR, WATER, SOIL  
AIR SOIL  
WATER SOIL

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 12:25  
ANALYSIS # 5 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 017-0180H 3.5-10

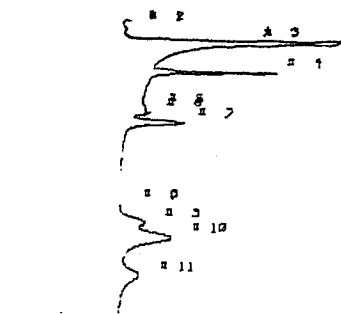
COMPOUND NAME FROM AIR, WATER, SOIL  
AIR SOIL  
WATER SOIL

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

BENZENE	1	83.2	100.0	PPB
TOLUENE	2	163.3	100.0	PPB
E-BENZENE	3	320.3	100.0	PPB
MP-XYLENE	4	343.1	100.0	PPB

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 12:45  
ANALYSIS # 7 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 100 PFB

151.0 PFB

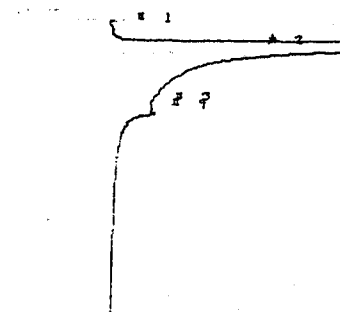
# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 20 1994 13:4  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PFB

100.0 PFB  
165.3 PFB

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 13:26  
ANALYSIS # 10 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 AIR

100.0 PFB  
165.3 PFB

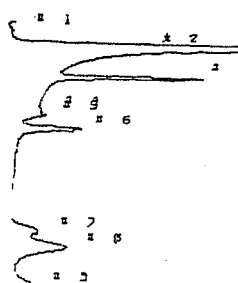
# PHOTOVAC

CALIBRATED PEAK 1, BENZENE

SAMPLE LIBRARY 1 JUL 20 1994 12:46  
ANALYSIS # 7 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 100 PFB

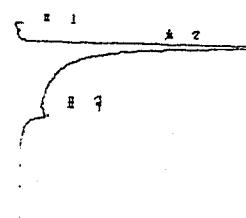
100.0 PFB  
163.4 PFB

# PHOTOVAC



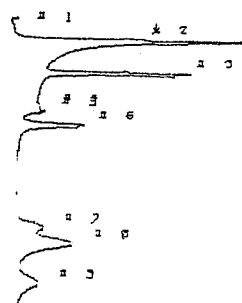
SAMPLE LIBRARY 1 JUL 20 1994 13:15  
ANALYSIS # 9 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PFB

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 13:45  
ANALYSIS # 11 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 017-0138H 1.5-2

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 13:3  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PFB

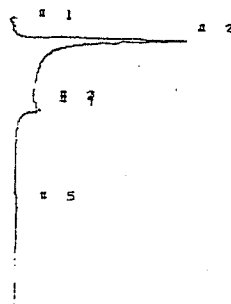
113.1 PFB  
110.3 PFB  
132.0 PFB

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

BENZENE	1	83.2	100.0 PFB
TOLUENE	2	165.1	100.0 PFB
E-BENZENE	3	325.1	100.0 PFB
MP-XYLENE	4	348.8	100.0 PFB

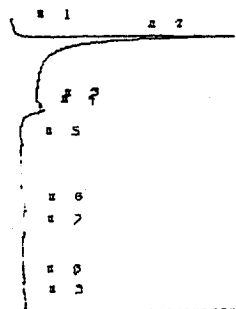
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 14:23  
ANALYSIS # 12 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 017-0138H 5.0-6

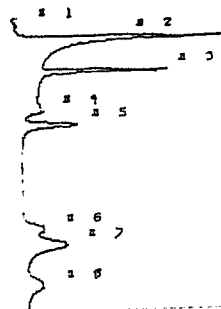


# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 14:33  
ANALYSIS # 13 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 017-0198H 3.5-10

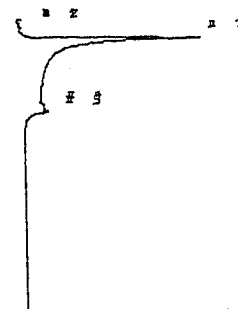
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 15:30  
ANALYSIS # 16 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 100 PFB

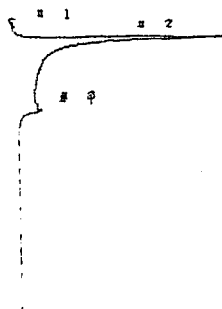
150.1 PFB

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 15:52  
ANALYSIS # 18 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 017-0208H 3.5-10

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 14:56  
ANALYSIS # 14 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 017-0208H 2-2.5

# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

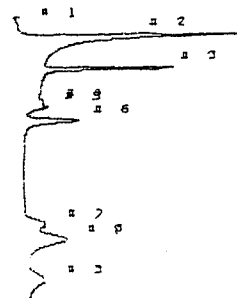
SAMPLE LIBRARY 1 JUL 20 1994 15:32  
ANALYSIS # 16 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 100 PFB

100.0 PFB

101.4 PFB

120.3 PFB

# PHOTOVAC



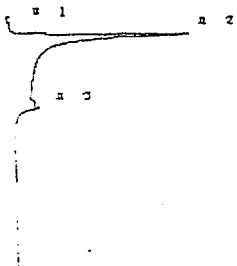
SAMPLE LIBRARY 1 JUL 20 1994 16:2  
ANALYSIS # 19 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 100 PFB

101.6 PFB

100.2 PFB

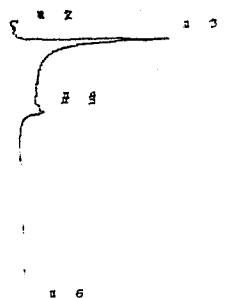
121.3 PFB

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 15:20  
ANALYSIS # 15 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 017-0208H 5.5-6

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 15:42  
ANALYSIS # 17 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 AIR

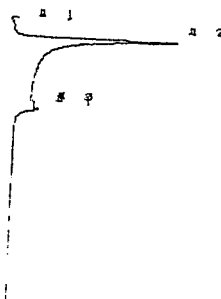
# PHOTOVAC

CALIBRATED PEAK 3-PENTENE

SAMPLE LIBRARY 1 JUL 20 1999 16:5  
ANALYSIS # 15 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 100 PPS

100.0 PPS  
100.6 PPS

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1999 16:19  
ANALYSIS # 20 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 AIR

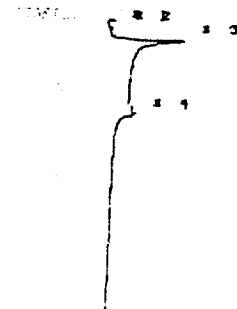
# PHOTOVAC

JUL 23 1994 10:23

FIELD: 30  
POWER: 43

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

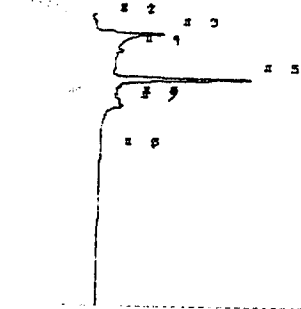
# PHOTOVAC



STOP 1 10:23  
SAMPLE LIBRARY 1 JUL 23 1994 11:13  
ANALYSIS # 2 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 021-025 PW

COMPOUND NAME: 10 021-025 PW  
ANALYSIS: 2 J BYRD, JR.  
INTERNAL TEMP: 32 DULUTH ANG  
GAIN: 10 021-025 PW

# PHOTOVAC



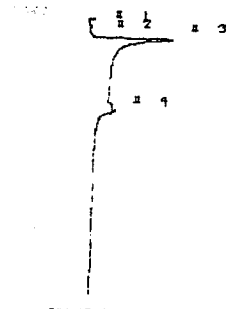
STOP 1 11:42  
SAMPLE LIBRARY 1 JUL 23 1994 11:42  
ANALYSIS # 5 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 021-014 PW

COMPOUND NAME: 10 021-014 PW  
ANALYSIS: 5 J BYRD, JR.  
INTERNAL TEMP: 33 DULUTH ANG  
GAIN: 10 021-014 PW

# PHOTOVAC

1 COMPOUND 10 021-014 PW

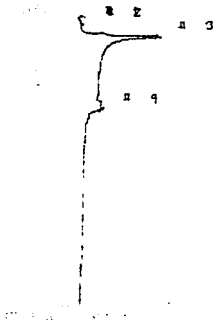
# PHOTOVAC



STOP 1 11:23  
SAMPLE LIBRARY 1 JUL 23 1994 11:23  
ANALYSIS # 3 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 021-025 PW

COMPOUND NAME: 10 021-025 PW  
ANALYSIS: 3 J BYRD, JR.  
INTERNAL TEMP: 33 DULUTH ANG  
GAIN: 10 021-025 PW

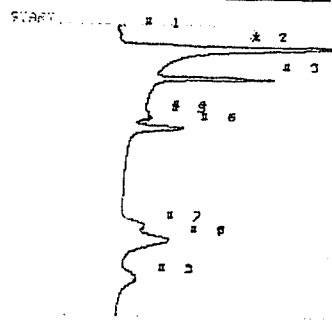
# PHOTOVAC



STOP 1 11:52  
SAMPLE LIBRARY 1 JUL 23 1994 11:52  
ANALYSIS # 6 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 021-026 PW

COMPOUND NAME: 10 021-026 PW  
ANALYSIS: 6 J BYRD, JR.  
INTERNAL TEMP: 33 DULUTH ANG  
GAIN: 10 021-026 PW

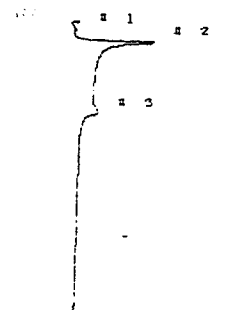
# PHOTOVAC



STOP 1 11:11  
SAMPLE LIBRARY 1 JUL 23 1994 11:11  
ANALYSIS # 1 J BYRD, JR.  
INTERNAL TEMP 31 DULUTH ANG  
GAIN 10 100 PFB

COMPOUND NAME: 10 100 PFB  
ANALYSIS: 1 J BYRD, JR.  
INTERNAL TEMP: 31 DULUTH ANG  
GAIN: 10 100 PFB

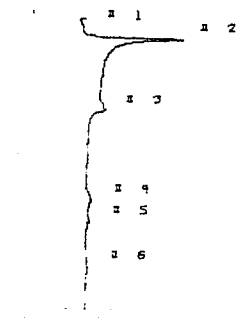
# PHOTOVAC



STOP 1 11:32  
SAMPLE LIBRARY 1 JUL 23 1994 11:32  
ANALYSIS # 4 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 021-010 PW

COMPOUND NAME: 10 021-010 PW  
ANALYSIS: 4 J BYRD, JR.  
INTERNAL TEMP: 33 DULUTH ANG  
GAIN: 10 021-010 PW

# PHOTOVAC



STOP 1 12:2  
SAMPLE LIBRARY 1 JUL 23 1994 12:2  
ANALYSIS # 7 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 018-006PW 2.5

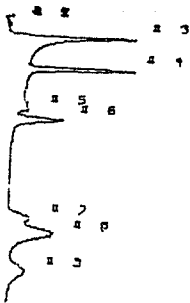
COMPOUND NAME: 10 018-006PW 2.5  
ANALYSIS: 7 J BYRD, JR.  
INTERNAL TEMP: 34 DULUTH ANG  
GAIN: 10 018-006PW 2.5

# PHOTOVAC

1 COMPOUND 10 021-014 PW

COMPOUND	10 021-014 PW
BENZENE	1 00.6 100.0 PFB
TOLUENE	2 153.5 100.0 PFB
E-BENZENE	3 312.5 100.0 PFB
PF-XYLENE	4 335.0 100.0 PFB

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 12:26  
ANALYSIS # 5 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 100 PPS

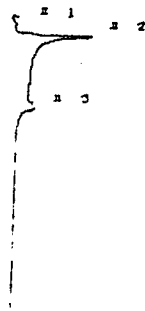
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 12:13  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 100 PPS

132.9 PPS

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 12:47  
ANALYSIS # 11 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 018-0068M 1.2

# PHOTOVAC

1	COMPOUND	ID #	R.T.	LIMIT
BENZENE	1	80.6	100.0 PPS	
TOLUENE	2	153.7	100.0 PPS	
E-BENZENE	3	313.1	100.0 PPS	
MP-XYLENE	4	335.6	100.0 PPS	
D-XYLENE	5	355.3	100.0 PPS	

# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 23 1994 12:14  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 100 PPS

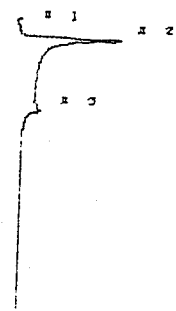
100.0 PPS

# PHOTOVAC



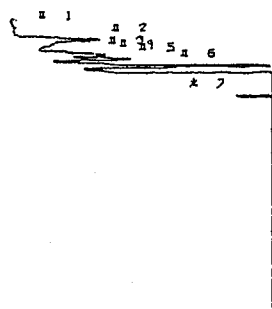
SAMPLE LIBRARY 1 JUL 23 1994 12:37  
ANALYSIS # 10 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 AIR

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 12:57  
ANALYSIS # 12 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 017-0108M1.5-2.5

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 13:0  
ANALYSIS # 13 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 010-007BH 2.5

COMPOUND NAME IDENTIFICATION

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 15:37  
ANALYSIS # 14 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PPB

COMPOUND NAME IDENTIFICATION

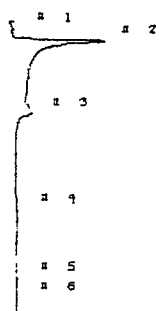
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 16:0  
ANALYSIS # 16 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 021-004SD

COMPOUND NAME IDENTIFICATION

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 16:11  
ANALYSIS # 17 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 021-004SD

COMPOUND NAME IDENTIFICATION

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

BENZENE	1	80.6	100.0	PPB
TOLUENE	2	152.7	100.0	PPB
E-BENZENE	3	313.1	100.0	PPB
MP-XYLENE	4	335.6	100.0	PPB
O-XYLENE	5	335.3	100.0	PPB

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

BENZENE	1	81.6	100.0	PPB
TOLUENE	2	161.7	100.0	PPB
E-BENZENE	3	312.3	100.0	PPB
MP-XYLENE	4	341.0	100.0	PPB
O-XYLENE	5	401.7	100.0	PPB

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 15:50  
ANALYSIS # 15 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 AIR

COMPOUND NAME IDENTIFICATION

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

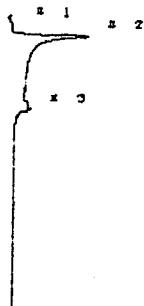
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 16:21  
ANALYSIS # 18 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 021-006SD

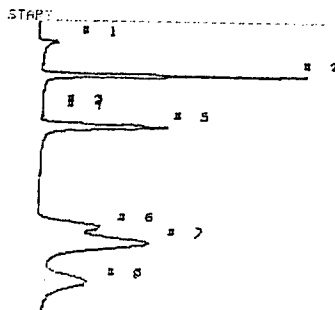
COMPOUND NAME IDENTIFICATION

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 16:31  
ANALYSIS # 13 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 021-007SD

# PHOTOVAC

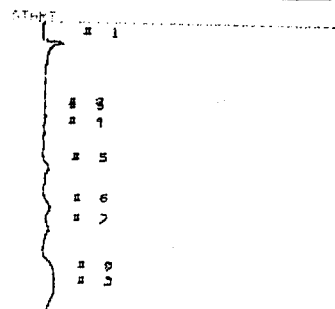


STOP # 490.0  
SAMPLE LIBRARY 1 JUL 23 1994 17: 5  
ANALYSIS # 22 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 1 PPM

COMPOUND NAME PEAK R.T. LIMIT

BENZENE	1	101.2	1.000 PPM
TOLUENE	2	161.2	1.000 PPM
E-BENZENE	3	312.0	1.000 PPM
MP-XYLENE	4	310.1	1.000 PPM

# PHOTOVAC

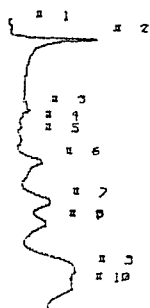


STOP # 492.0  
SAMPLE LIBRARY 1 JUL 23 1994 17:27  
ANALYSIS # 24 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 018-007BH 0.8-1.3

COMPOUND NAME PEAK R.T. LIMIT

BENZENE	1	101.2	1.000 PPM
TOLUENE	2	161.2	1.000 PPM
E-BENZENE	3	312.0	1.000 PPM
MP-XYLENE	4	310.1	1.000 PPM

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 16:41  
ANALYSIS # 20 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 018-007BH .8-1.3

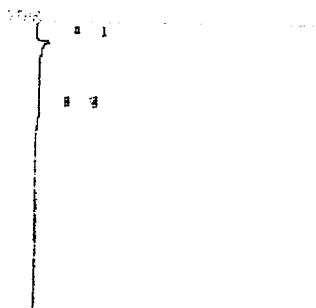
214.3 PPM  
653.6 PPM  
570.0 PPM

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

BENZENE	1	101.2	1.000 PPM
TOLUENE	2	161.2	1.000 PPM
E-BENZENE	3	312.0	1.000 PPM
MP-XYLENE	4	310.1	1.000 PPM

# PHOTOVAC

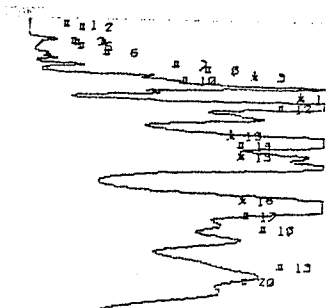


STOP # 492.0  
SAMPLE LIBRARY 1 JUL 23 1994 17:17  
ANALYSIS # 23 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 2 AIR

COMPOUND NAME PEAK R.T. LIMIT

BENZENE	1	101.2	1.000 PPM
TOLUENE	2	161.2	1.000 PPM

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 17:37  
ANALYSIS # 25 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 018-007BH 2.5

COMPOUND NAME PEAK R.T. LIMIT

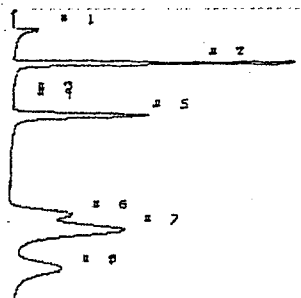
BENZENE	1	101.2	1.000 PPM
TOLUENE	2	161.2	1.000 PPM

3.531 PPM

3.224 PPM

1.033 PPM

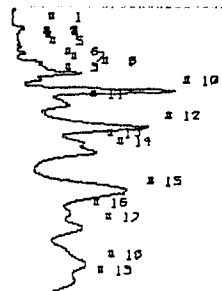
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 12:50  
ANALYSIS # 26 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 2 1 PPM BTEX

1.023 PPM  
1.028 PPM  
1.026 PPM  
2.053 PPM

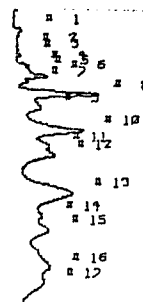
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 18:4  
ANALYSIS # 27 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 2 018-0020M 2.5

1.022 PPM

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 18:30  
ANALYSIS # 29 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 2 018-0020M 2.5

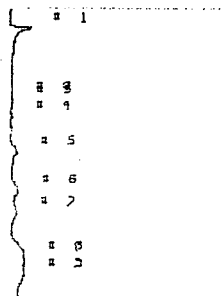
1.022 PPM

# PHOTOVAC

CALIBRATED PEAK 2, BENZENE  
SAMPLE LIBRARY 1 JUL 23 1994 17:52  
ANALYSIS # 26 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 1 PPM BTEX

1.000 PPM  
1.307 PPM

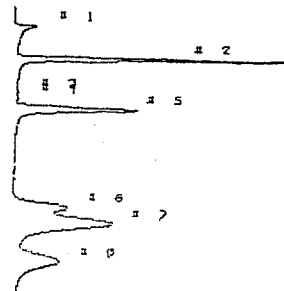
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 18:18  
ANALYSIS # 28 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 2 018-0020M 0.8-1.3

1.022 PPM

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 18:43  
ANALYSIS # 30 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 1 PPM

1.616 PPM

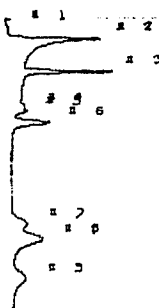
# PHOTOVAC

CALIBRATED PEAK 2, BENZENE

SAMPLE LIBRARY 1 JUL 23 1994 18:45  
ANALYSIS # 38 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 1 PPM

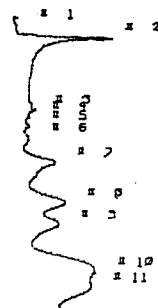
1.260 PPM

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 19:08  
ANALYSIS # 32 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PPM

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 19:23  
ANALYSIS # 34 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 010-0028H0.8-1.3

224.6 PPM  
056.0 PPM  
735.2 PPM

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 18:52  
ANALYSIS # 31 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 AIR

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

BENZENE	1	81.2	100.0	PPM
TOLUENE	2	162.1	100.0	PPM
E-BENZENE	3	318.2	100.0	PPM
MP-XYLENE	4	341.6	100.0	PPM
O-XYLENE	5	402.5	100.0	PPM

# PHOTOVAC



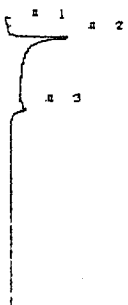
SAMPLE LIBRARY 1 JUL 23 1994 19:42  
ANALYSIS # 35 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 010-0028H0.8-1.3

166.3 PPM  
183.6 PPM  
136.8 PPM

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

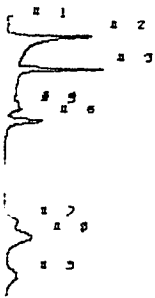
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 19:19  
ANALYSIS # 33 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 AIR



# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 13:54  
 ANALYSIS # 36 J BYRD, JR.  
 INTERNAL TEMP 36 DULUTH ANG  
 GAIN 10 100 PFB

129.7 PFB

# PHOTOVAC

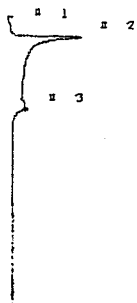
CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 23 1994 13:56  
 ANALYSIS # 36 J BYRD, JR.  
 INTERNAL TEMP 36 DULUTH ANG  
 GAIN 10 100 PFB

100.0 PFB

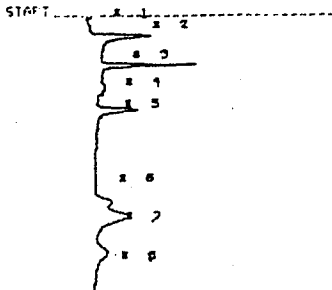
107.0 PFB

# PHOTOVAC



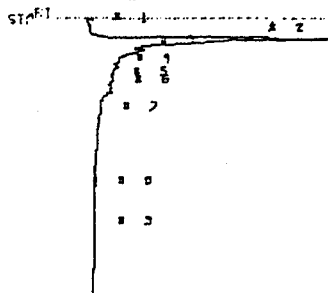
SAMPLE LIBRARY 1 JUL 23 1994 20: 7  
 ANALYSIS # 37 J BYRD, JR.  
 INTERNAL TEMP 36 DULUTH ANG  
 GAIN 10 AIR

# PHOTOVAC



STOP 0 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 12:41  
 ANALYSIS # 15 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 021-025 10-11

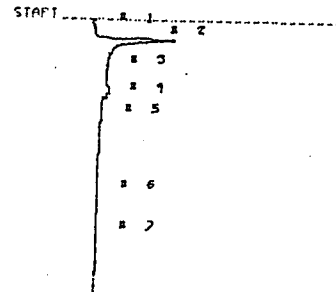
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.7	1.8 US
BENZENE	3	78.3	97.80 PPB
UNKNOWN	4	117.4	175.7 μUS
TOLUENE	5	152.6	100.8 PPB
E-BEN, MP-XYL	7	324.9	231.6 PPB



STOP 0 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 13:5  
 ANALYSIS # 15 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 021-025 10-11

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.1	2.8 US
UNKNOWN	3	51.1	2.1 US

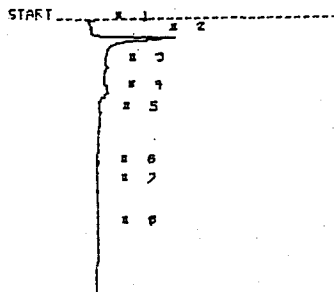
# PHOTOVAC



STOP 0 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 13:35  
 ANALYSIS # 18 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 021-023 1.5-2.0

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	32.0	3.3 US
BENZENE	3	78.3	73.04 PPB
UNKNOWN	4	117.4	979.2 μUS

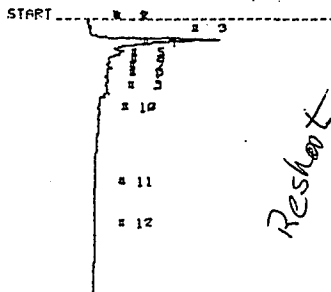
# PHOTOVAC



STOP 0 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 12:52  
 ANALYSIS # 13 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 021-025 1.5-2.0

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.7	3.3 US
BENZENE	3	78.3	82.82 PPB
UNKNOWN	4	117.4	838.5 μUS
TOLUENE	5	152.6	5.210 PPB

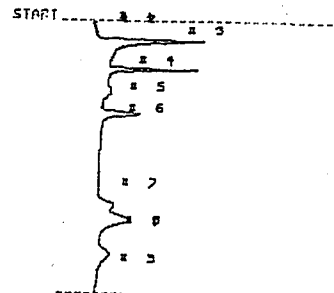
# PHOTOVAC



STOP 0 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 13:14  
 ANALYSIS # 16 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 021-025 10-11

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	31.7	2.0 US
UNKNOWN	4	51.1	125.2 μUS

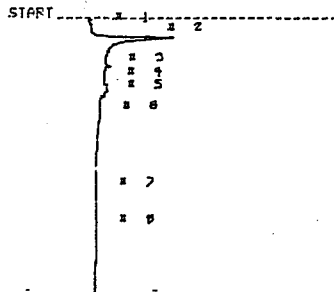
# PHOTOVAC



STOP 0 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 13:44  
 ANALYSIS # 19 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 021-023 1.5-2.0

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	31.7	3.3 US
BENZENE	4	78.3	126.0 PPB
UNKNOWN	5	117.4	951.3 μUS
TOLUENE	6	151.5	89.24 PPB
E-BEN, MP-XYL	8	324.9	272.4 PPB

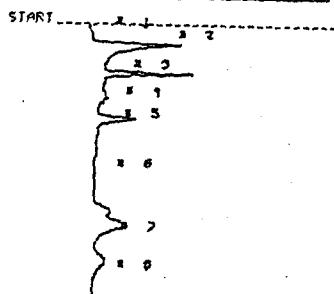
# PHOTOVAC



STOP 0 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 13:52  
 ANALYSIS # 20 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 021-025 10-11

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.7	3.3 US
BENZENE	3	78.3	58.19 PPB
UNKNOWN	4	98.9	138.0 μUS
UNKNOWN	5	117.4	971.7 μUS

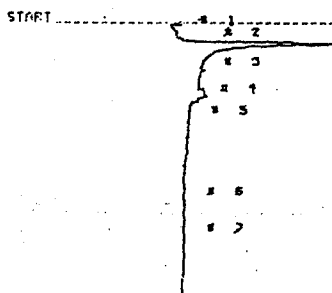
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 13:57  
 ANALYSIS # 20 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 1021-023 1.5-2.0

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.2	4.1 US
UNKNOWN	3	78.3	2.5 US
UNKNOWN	4	117.4	1.2 US
UNKNOWN	5	152.6	1.9 US
UNKNOWN	7	327.1	2.6 US

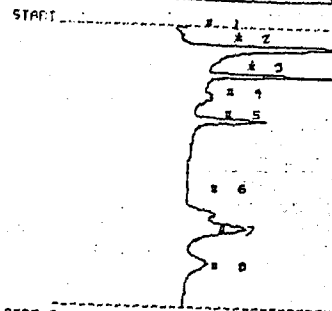
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 14:20  
 ANALYSIS # 22 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 10 AIR BLANK

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.2	7.4 US
BENZENE	3	78.3	38.41 PPB
UNKNOWN	4	117.4	1.7 US

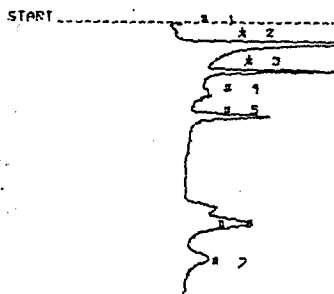
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 14:38  
 ANALYSIS # 24 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 10 100 PPB

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.5	3.1 US
BENZENE	3	77.1	31.46 PPB
UNKNOWN	4	117.4	1.6 US
TOLUENE	5	152.6	30.38 PPB
E-BENZ, MP-XYL	7	327.1	271.6 PPB

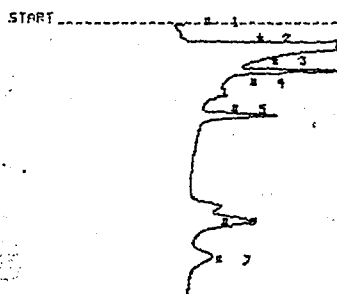
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 14:06  
 ANALYSIS # 21 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 10 021-023 1.5-2.0

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.9	11.8 US
UNKNOWN	3	77.3	5.8 US
UNKNOWN	4	117.4	1.8 US
UNKNOWN	5	151.5	1.8 US
UNKNOWN	6	327.1	5.2 US

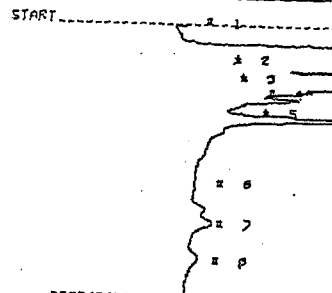
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 14:28  
 ANALYSIS # 23 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 10 100 PPB

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	35.4	31.5 US
BENZENE	3	76.6	120.5 PPB
UNKNOWN	4	111.8	1.4 US
TOLUENE	5	151.5	46.21 PPB
E-BENZ, MP-XYL	6	327.1	271.3 PPB

# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 14:49  
 ANALYSIS # 25 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 10 021-023 10.5-11

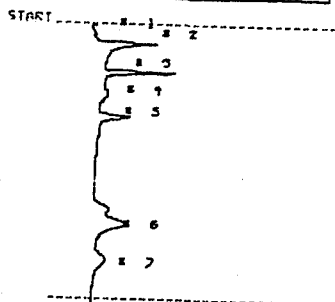
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	49.7	188.9 US
UNKNOWN	3	86.8	19.9 US
TOLUENE	5	149.3	230.0 PPB
E-BENZ, MP-XYL	7	327.1	98.01 PPB

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

BENZENE	1	77.0	100.0 PPB
TOLUENE	2	151.5	100.0 PPB
E-BENZ, MP-XYL	3	327.1	100.0 PPB

# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 14:53  
 ANALYSIS # 26 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 100 PPS

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	32.0	2.7 US
BENZENE	3	78.3	72.93 PPS
UNKNOWN	4	112.4	252.6 PPS
TOLUENE	5	152.6	83.18 PPS
E-BENZ, MP-XYL	6	327.1	223.5 PPS

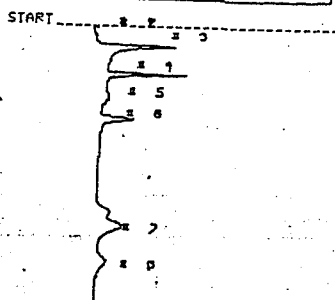
# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 13 1994 15:1  
 ANALYSIS # 26 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANG  
 GAIN 5 100 PPS

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	32.0	2.7 US
BENZENE	3	78.3	100.0 PPS
UNKNOWN	4	112.4	252.6 PPS
TOLUENE	5	152.6	110.1 PPS
E-BENZ, MP-XYL	6	327.1	225.6 PPS

# PHOTOVAC



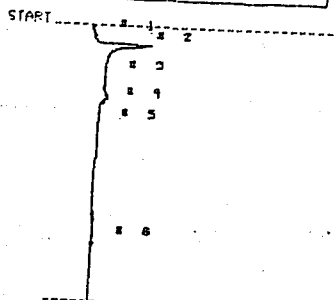
STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 15:12  
 ANALYSIS # 27 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANG  
 GAIN 5 100 PPS

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	3	31.7	0.1 US
UNKNOWN	4	78.3	2.2 US
UNKNOWN	5	112.4	282.2 PPS
UNKNOWN	6	322.6	718.0 PPS

# PHOTOVAC

1 COMPOUND 10 # R.T. LIMIT  
 BEN 1 78.3 100.0 PPS  
 TOL 2 152.6 100.0 PPS  
 E-BEN, MP-XYL 3 327.1 100.0 PPS

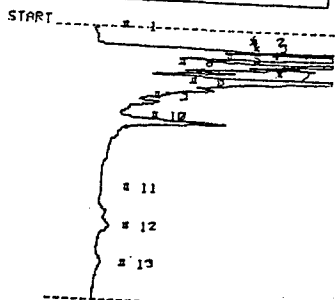
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 15:23  
 ANALYSIS # 28 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANG  
 GAIN 5 100 PPS

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	32.0	2.6 US
BEN	3	78.3	21.84 PPS
UNKNOWN	4	112.4	149.2 PPS

# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 1 JUL 13 1994 15:32  
 ANALYSIS # 23 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANG  
 GAIN 5 821-823 10.5-11

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	31.6	4.1 US
UNKNOWN	3	38.5	8.4 US
UNKNOWN	4	50.7	8.7 US
UNKNOWN	5	55.1	3.6 US
UNKNOWN	6	68.1	2.3 US
BEN	7	76.7	642.0 PPS
UNKNOWN	8	97.5	3.2 US
TOL	10	151.5	333.0 PPS
E-BEN, MP-XYL	12	324.4	176.2 PPS

# PHOTOVAC

JUL 13 1994 15:36

FIELD: 30  
 POWER: 42

SAMPLE	0.0	0.0
CAL	0.0	0.0
EVENT 3	0.0	0.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 8	0.0	0.0

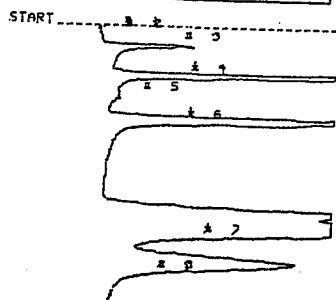
# PHOTOVAC

JUL 13 1994 15:37

FIELD: 30  
 POWER: 43

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 8	0.0	0.0

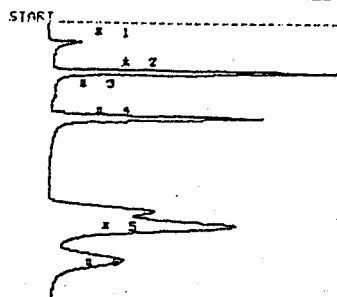
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 15:47  
 ANALYSIS # 32 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANG  
 GAIN 5 1 PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	9.5	5.3 PPS
UNKNOWN	3	31.7	3.5 US
UNKNOWN	4	76.8	10.6 US
UNKNOWN	5	111.0	1.5 US
UNKNOWN	6	149.3	19.0 US
UNKNOWN	7	311.1	232.5 US

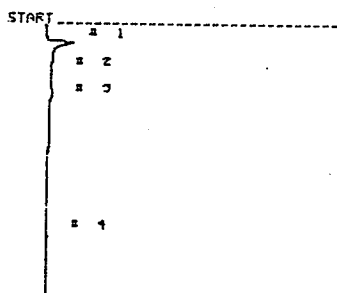
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 15:55  
 ANALYSIS # 33 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 1 PPM

COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 1 32.0 791.8 µS  
 UNKNOWN 3 117.4 44.4 µS  
 UNKNOWN 4 323.3 6.8 µS

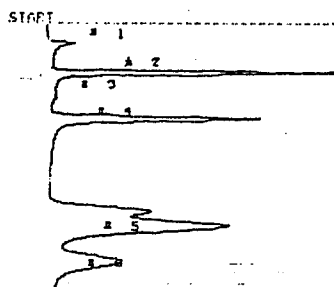
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 16: 6  
 ANALYSIS # 34 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 AIR

COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 1 32.0 791.8 µS  
 UNKNOWN 3 117.4 44.4 µS  
 UNKNOWN 4 323.3 6.8 µS

# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 16:15  
 ANALYSIS # 35 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 1 PPM

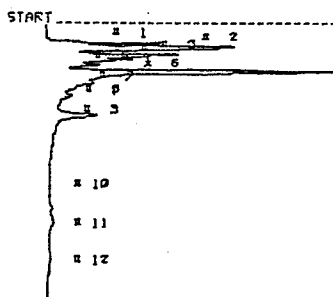
COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 1 32.0 1.0 US  
 UNKNOWN 2 36.8 2.3 US  
 UNKNOWN 3 111.0 568.3 µS  
 UNKNOWN 4 152.6 6.3 US  
 UNKNOWN 5 327.1 12.9 US

# PHOTOVAC

2 COMPOUND ID # R.T. LIMIT

BENZENE 1 32.0 1.000 PPM  
 EBEN, MPXYL 3 327.1 1.000 PPM

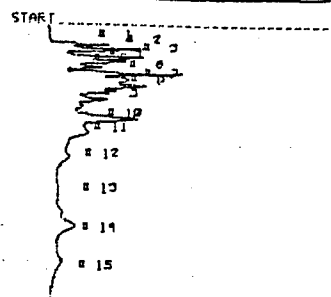
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 16:28  
 ANALYSIS # 36 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 1 PPM

COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 1 32.0 1.2 US  
 UNKNOWN 2 36.8 2.0 US  
 UNKNOWN 3 111.0 568.3 µS  
 UNKNOWN 4 152.6 6.3 US  
 UNKNOWN 5 327.1 12.9 US  
 BENZ 6 77.4 1.110 PPM  
 UNKNOWN 7 38.2 1.2 US  
 TOLUENE 9 152.6 117.5 PPB  
 EBEN, MPXYL 11 327.1 61.10 PPB

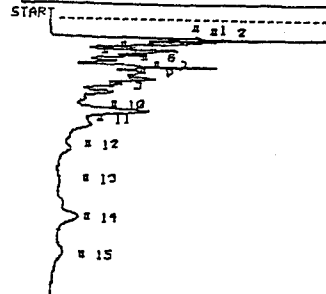
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 16:33  
 ANALYSIS # 37 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 021-022 6.0-6.5

COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 1 32.0 744.2 µS  
 UNKNOWN 2 36.8 1.7 US  
 UNKNOWN 3 51.5 1.9 US  
 UNKNOWN 4 53.1 1.1 US  
 UNKNOWN 5 68.6 371.4 µS  
 BENZ 6 79.3 334.2 PPB  
 UNKNOWN 7 98.5 2.4 US  
 UNKNOWN 8 98.9 2.9 US  
 UNKNOWN 9 120.8 304.4 µS  
 TOLUENE 10 152.6 228.6 PPB  
 UNKNOWN 11 179.4 360.2 µS  
 UNKNOWN 13 268.0 69.3 µS  
 EBEN, MPXYL 14 327.1 220.3 PPB

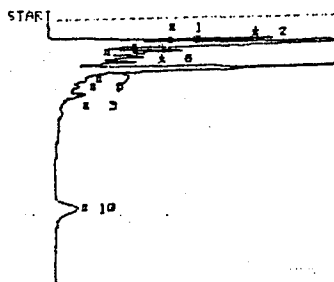
# PHOTOVAC



STOP @ 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 16:50  
 ANALYSIS # 38 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 021-022 6.0-6.5

COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 1 32.0 3.4 US  
 UNKNOWN 2 37.4 3.5 US  
 UNKNOWN 3 51.5 2.7 US  
 UNKNOWN 4 53.1 1.5 US  
 UNKNOWN 5 68.6 1.2 US  
 BENZ 6 79.3 334.9 PPB  
 UNKNOWN 7 98.5 2.4 US  
 UNKNOWN 8 98.9 2.9 US  
 UNKNOWN 9 120.8 304.4 µS  
 TOLUENE 10 152.6 228.6 PPB  
 UNKNOWN 11 179.4 360.2 µS  
 UNKNOWN 13 268.0 69.3 µS  
 EBEN, MPXYL 14 327.1 220.3 PPB

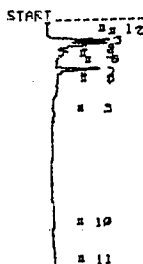
# PHOTOVAC



STOP # 430.3  
 SAMPLE LIBRARY 2 JUL 13 1994 17:14  
 ANALYSIS # 39 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 021-022 16.5-17

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.9	2.5 US
UNKNOWN	2	38.9	2.1 US
UNKNOWN	3	51.1	2.9 US
UNKNOWN	4	63.1	1.3 US
UNKNOWN	5	68.6	1.4 US
BENZ	6	78.8	1.081 PPM
UNKNOWN	7	110.2	618.3 PPM
UNKNOWN	8	153.7	376.1 PPM
EBEN, MPXYL	9	329.3	2.211 PPM

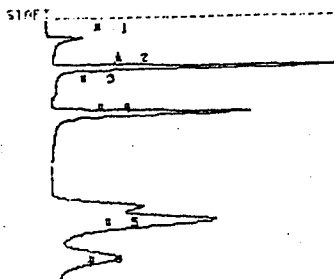
# PHOTOVAC



STOP # 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 17:11  
 ANALYSIS # 40 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 021-022 16.5-17

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.6	753.8 MUS
UNKNOWN	2	37.7	1.0 US
UNKNOWN	3	51.5	435.0 MUS
UNKNOWN	4	59.6	247.2 MUS
UNKNOWN	5	69.1	122.4 MUS
BENZ	6	79.5	141.5 PPM
UNKNOWN	7	99.6	236.5 MUS
UNKNOWN	8	109.4	238.7 MUS
TOLUENE	9	153.7	3.655 PPM
BENZ, MPXYL	10	329.3	11.09 PPM

# PHOTOVAC



STOP # 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 17:31  
 ANALYSIS # 41 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 1 PPM

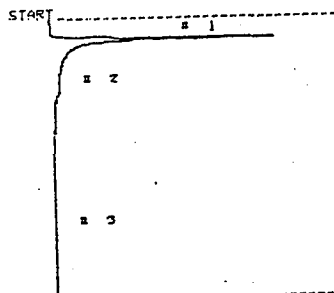
COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.9	1.4 US
BENZ	2	78.8	1.081 PPM
UNKNOWN	3	110.2	618.3 PPM
TOLUENE	4	153.7	376.1 PPM
EBEN, MPXYL	5	329.3	2.211 PPM

# PHOTOVAC

STOP # 430.2  
 SAMPLE LIBRARY 2 JUL 13 1994 17:35  
 ANALYSIS # 42 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 1 PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
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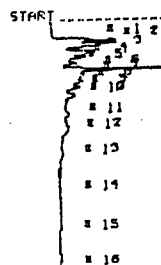
# PHOTOVAC



STOP # 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 17:43  
 ANALYSIS # 43 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 1 PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.0	5.3 US
UNKNOWN	2	111.8	241.8 MUS

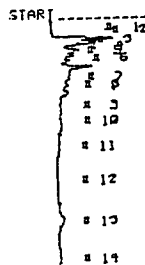
# PHOTOVAC



STOP # 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 17:55  
 ANALYSIS # 44 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 021-022 14.5-15

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	32.6	304.1 MUS
UNKNOWN	2	37.7	1.2 US
UNKNOWN	3	51.9	832.1 MUS
UNKNOWN	4	59.6	555.2 MUS
UNKNOWN	5	69.1	323.8 MUS
BENZ	6	79.5	240.1 PPM
UNKNOWN	7	99.6	224.3 MUS
UNKNOWN	8	109.4	634.5 MUS
UNKNOWN	9	109.6	635.7 MUS
UNKNOWN	10	121.7	210.4 MUS
TOLUENE	11	151.5	11.79 PPM
UNKNOWN	12	175.6	110.6 MUS
EBEN, MPXYL	13	329.3	11.95 PPM

# PHOTOVAC



STOP # 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 18:06  
 ANALYSIS # 45 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 021-022 14.5-15  
 COMPOUND NAME PEAK R.T. AREA/PPM  
 BENZ 6 79.5 141.5 PPM  
 EBEN 13 329.3 11.95 PPM

# PHOTOVAC

CALIBRATED PEAK 3.0BENZENE

SAMPLE LIBRARY 1 JUL 15 1994 10:28  
ANALYSIS # 14 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 5 100 PFB

COMPOUND NAME	PEAK	R.T.	AREA/PFB
UNKNOWN	2	102.3	2.3 US
BENZENE	3	100.0	100.0 PFB
TOLUENE	4	101.3	101.3 PFB
EDUETHENE	5	101.3	101.3 PFB

# PHOTOVAC

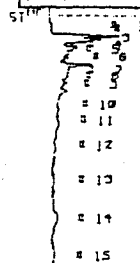
STMT

STOP 6 102.3  
SAMPLE LIBRARY 1 JUL 15 1994 10:28  
ANALYSIS # 15 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 5 AIR

COMPOUND NAME PEAK R.T. AREA/PFB

UNKNOWN 2 102.3 2.3 US

# PHOTOVAC

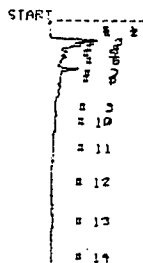


STOP 4 432.2  
 SAMPLE LIBRARY 2 JUL 13 1994 18:16  
 ANALYSIS # 46 J BYRD, JR  
 INTERNAL TEMP 35 DULUTH ANG8  
 GAIN 2 021-021 14.5-15

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN	1	32.3	1.0 US
UNKNOWN	2	37.4	595.4 μS
UNKNOWN	3	51.5	375.7 μS
UNKNOWN	4	53.6	324.7 μS
UNKNOWN	5	68.6	284.0 μS
BENZ	6	78.3	102.5 PPB
EBEN, MPXYL	14	327.1	59.56 PPB

# PHOTOVAC

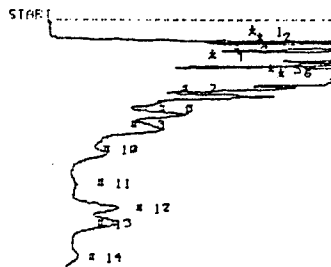


STOP 4 432.0  
 SAMPLE LIBRARY 2 JUL 13 1994 18:27  
 ANALYSIS # 47 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 021-023 14.5-15

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN	1	32.3	744.7 μS
UNKNOWN	2	37.4	753.7 μS
UNKNOWN	3	51.5	375.7 μS
UNKNOWN	4	53.6	324.7 μS
UNKNOWN	5	68.6	284.0 μS
BENZ	6	78.3	102.5 PPB
UNKNOWN	7	38.3	278.7 μS
UNKNOWN	8	109.4	293.1 μS

# PHOTOVAC

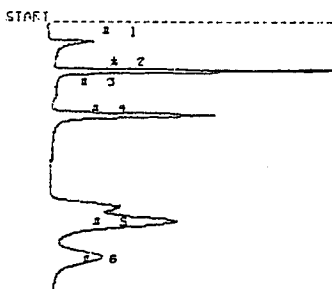


STOP 4 432.0  
 SAMPLE LIBRARY 2 JUL 13 1994 18:33  
 ANALYSIS # 48 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 021-024 10.5-11

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN	1	32.4	4.3 US
UNKNOWN	2	39.5	12.9 US
UNKNOWN	3	55.3	28.3 US
UNKNOWN	4	62.7	6.2 US
BENZ	5	92.4	6.104 PPM
UNKNOWN	9	126.7	938.9 μS
TOLUENE	8	151.5	146.4 PPB
UNKNOWN	9	175.6	262.4 μS
UNKNOWN	10	214.3	94.9 μS
UNKNOWN	11	266.2	121.8 μS
EBEN, MPXYL	12	305.5	403.8 PPB
EBEN, MPXYL	13	328.3	272.5 PPB

# PHOTOVAC



STOP 4 432.0  
 SAMPLE LIBRARY 2 JUL 13 1994 18:51  
 ANALYSIS # 49 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 1 PPM

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN	1	31.7	1.7 US
BENZ	2	77.7	844.7 PPB
UNKNOWN	3	111.0	390.4 μS
TOLUENE	4	152.6	674.4 PPB
EBEN, MPXYL	5	327.1	2.055 PPM

# PHOTOVAC

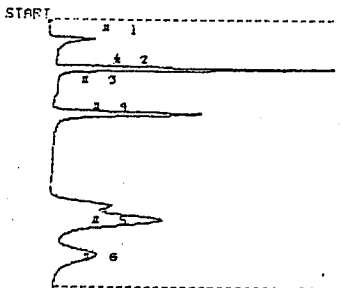
CALIBRATED PEAK 2, BENZ

SAMPLE LIBRARY 2 JUL 13 1994 18:53  
 ANALYSIS # 49 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 1 PPM

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN	1	31.7	1.7 US
BENZ	2	77.7	1.000 PPM
UNKNOWN	3	111.0	390.4 μS
TOLUENE	4	152.6	238.4 PPB
EBEN, MPXYL	5	327.1	2.433 PPM

# PHOTOVAC



STOP 4 432.0  
 SAMPLE LIBRARY 2 JUL 13 1994 19:14  
 ANALYSIS # 50 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2 1 PPM

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN	1	32.3	1.7 US
UNKNOWN	2	77.3	6.6 US
UNKNOWN	3	111.0	384.5 μS
UNKNOWN	4	152.6	4.2 US
UNKNOWN	5	327.1	10.9 US

# PHOTOVAC

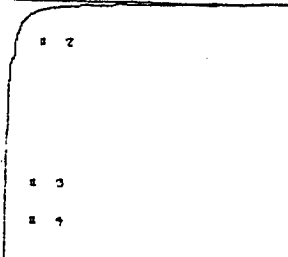
2 COMPOUND ID # R.T. LIMIT

BENZ	1	77.3	1.000 PPM
TOLUENE	2	152.6	1.000 PPM
EBENZ MPXYL	3	327.1	1.000 PPM



# PHOTOVAC

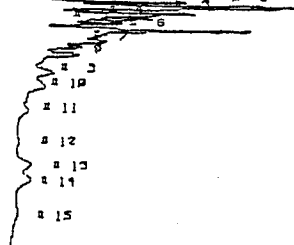
START



STOP @ 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 19:18  
 ANALYSIS # 51 J BYRD, JR  
 INTERNAL TEMP 34 DULUTH ANG8  
 GAIN 2  
 AIR BLANK  
 COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 1 31.5 7.5 US

# PHOTOVAC

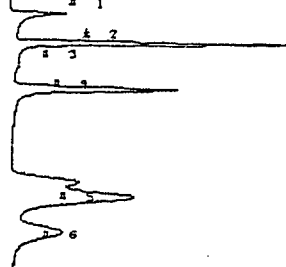
START



STOP @ 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 19:30  
 ANALYSIS # 52 J BYRD, JR  
 INTERNAL TEMP 33 DULUTH ANG8  
 GAIN 2 021-024 10.5-11  
 COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 1 32.6 2.0 US  
 UNKNOWN 2 39.8 6.1 US  
 UNKNOWN 3 51.5 3.9 US  
 UNKNOWN 4 59.6 2.5 US  
 UNKNOWN 5 68.6 1.9 US  
 BENZ 6 79.9 1.077 PPM  
 UNKNOWN 7 38.2 2.5 US  
 UNKNOWN 8 120.8 328.2 PPM  
 TOLUENE 9 151.5 96.42 PPM  
 UNKNOWN 10 175.6 122.0 PPM  
 UNKNOWN 11 214.3 63.3 PPM  
 UNKNOWN 12 266.2 28.8 PPM  
 US BENZ 13 303.5 139.4 PPM  
 EBENZ MPXYL 14 323.3 182.9 PPM

# PHOTOVAC

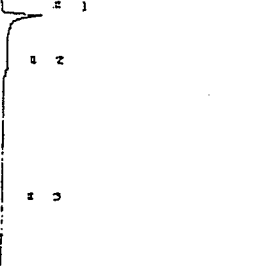
START



STOP @ 430.0 JUL 12 1994 19:46  
 SAMPLE LIBRARY 2 DULUTH ANG8  
 ANALYSIS # 53 1 PPM  
 GAIN 2  
 COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 1 32.3 1.3 US  
 BENZ 2 124.3 42.73 PPM  
 EBENZ MPXYL 5 327.1 3.100 PPM

# PHOTOVAC

START



STOP @ 430.0  
 SAMPLE LIBRARY 2 JUL 13 1994 19:56  
 ANALYSIS # 54 J BYRD, JR  
 INTERNAL TEMP 33 DULUTH ANG8  
 GAIN 2 AIR  
 COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 1 32.3 1.2 US

# PHOTOVAC

JUL 14 1994 9:10

FIELD: 23  
POWER: 43

SAMPLE	0.0	10.0
AL	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

# PHOTOVAC

START



STOP 8 430.0  
SAMPLE LIBRARY 1 JUL 14 1994 9:5  
ANALYSIS # 3 J BYRD, JR.  
INTERNAL TEMP 23 DULUTH ANG  
GAIN 10 100 PPD

COMPOUND NAME PEAK R.T. AREA/PPD

UNKNOWN	2	26.4	11.4	US
UNKNOWN	3	180.0	1.0	US
UNKNOWN	4	200.0	1.0	US

# PHOTOVAC

START



STOP 8 430.0  
SAMPLE LIBRARY 1 JUL 14 1994 9:21  
ANALYSIS # 4 J BYRD, JR.  
INTERNAL TEMP 23 DULUTH ANG  
GAIN 5 100 PPD

COMPOUND NAME PEAK R.T. AREA/PPD

UNKNOWN	2	22.0	2.7	US
UNKNOWN	3	21.9	377.8	US
UNKNOWN	5	159.5	992.2	US
UNKNOWN	7	216.1	713.3	US
UNKNOWN	8	330.5	2.3	US

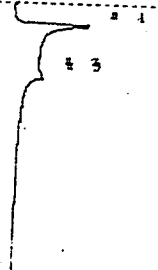
# PHOTOVAC

1 COMPOUND 10 # R.T. LIMIT

COMPOUND	10 #	R.T.	LIMIT
BENZENE	1	81.3	100.0 PPD
TOLUENE	2	150.5	100.0 PPD
E-BENZENE	3	216.1	100.0 PPD
MP-XYLENE	4	330.5	100.0 PPD

# PHOTOVAC

START



STOP 8 430.0  
SAMPLE LIBRARY 1 JUL 14 1994 9:33  
ANALYSIS # 5 J BYRD, JR.  
INTERNAL TEMP 23 DULUTH ANG  
GAIN 5 AIR

COMPOUND NAME PEAK R.T. AREA/PPD

UNKNOWN	1	22.0	1.6	US
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# PHOTOVAC

START



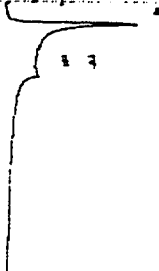
STOP 8 430.0  
SAMPLE LIBRARY 1 JUL 14 1994 9:43  
ANALYSIS # 6 J BYRD, JR.  
INTERNAL TEMP 30 DULUTH ANG  
GAIN 5 021-021 2.0-2.5

COMPOUND NAME PEAK R.T. AREA/PPD

UNKNOWN	2	22.0	1.2	US
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# PHOTOVAC

START



STOP 8 430.0  
SAMPLE LIBRARY 1 JUL 14 1994 9:53  
INTERNAL TEMP 30 DULUTH ANG  
GAIN 5 021-021 2.0-2.5

COMPOUND NAME PEAK R.T. AREA/PPD

UNKNOWN	2	22.0	0.5	US
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# PHOTOVAC

START



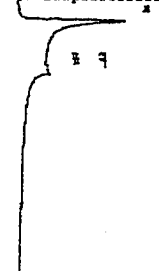
STOP 8 430.0  
SAMPLE LIBRARY 1 JUL 14 1994 10:3  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 30 DULUTH ANG  
GAIN 5 021-020 10.5-11.5

COMPOUND NAME PEAK R.T. AREA/PPD

UNKNOWN	2	22.0	0.9	US
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# PHOTOVAC

START

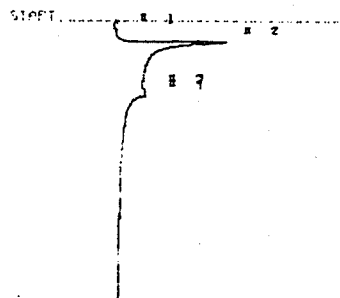


STOP 8 430.0  
SAMPLE LIBRARY 1 JUL 14 1994 10:14  
ANALYSIS # 9 J BYRD, JR.  
INTERNAL TEMP 30 DULUTH ANG  
GAIN 5 021-021 6.5-7.0

COMPOUND NAME PEAK R.T. AREA/PPD

UNKNOWN	2	22.0	0.6	US
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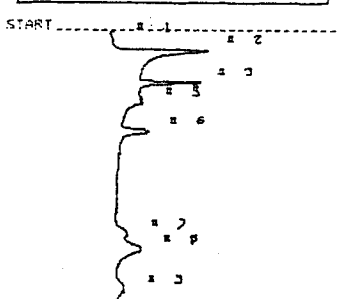
# PHOTOVAC



STOP 8 430.0  
 SAMPLE LIBRARY 1 JUL 14 1994 10:24  
 ANALYSIS # 10 J BYRD, JR.  
 INTERNAL TEMP 31 DULUTH ANGUS  
 GAIN 5 021-024 6.5-7.0

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	32.4	2.0 US

# PHOTOVAC



STOP 8 430.0  
 SAMPLE LIBRARY 1 JUL 14 1994 10:33  
 ANALYSIS # 11 J BYRD, JR.  
 INTERNAL TEMP 31 DULUTH ANGUS  
 GAIN 5 100 PPB

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	32.4	2.3 US
BENZENE	3	82.0	87.81 PPB
TOLUENE	6	153.1	85.81 PPB
E-BENZENE	7	312.3	28.56 PPB
MP-XYLENE	9	341.5	32.27 PPB

# PHOTOVAC

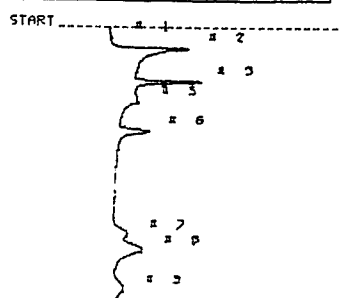
CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1	JUL 14 1994	10:34
ANALYSIS # 11	J BYRD, JR.	
INTERNAL TEMP 31	DULUTH ANGUS	
GAIN 5	100 PPB	

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	32.4	2.0 US
BENZENE	3	82.0	100.0 PPB
TOLUENE	6	153.1	32.27 PPB
E-BENZENE	7	312.3	34.61 PPB
MP-XYLENE	9	341.5	105.0 PPB

# PHOTOVAC



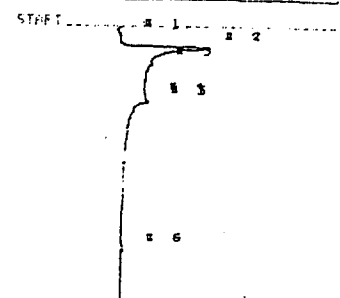
STOP 8 430.0  
 SAMPLE LIBRARY 1 JUL 14 1994 11:21  
 ANALYSIS # 12 J BYRD, JR.  
 INTERNAL TEMP 32 DULUTH ANGUS  
 GAIN 5 100 PPB

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	32.2	1.7 US
UNKNOWN	3	82.2	324.4 MUS
UNKNOWN	6	153.7	623.3 MUS
UNKNOWN	7	313.1	222.3 MUS
UNKNOWN	9	343.1	1.3 US

# PHOTOVAC

1	COMPOUND	ID #	R.T.	LIMIT
BENZENE	1	82.2	100.0 PPB	
TOLUENE	2	153.7	100.0 PPB	
E-BENZENE	3	313.1	100.0 PPB	
MP-XYLENE	4	343.1	100.0 PPB	

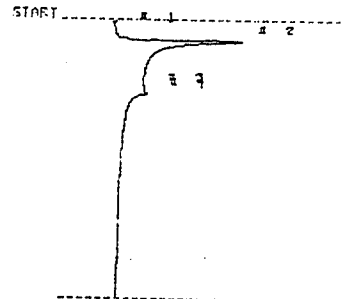
# PHOTOVAC



STOP 8 430.0  
 SAMPLE LIBRARY 1 JUL 14 1994 11:34  
 ANALYSIS # 13 J BYRD, JR.  
 INTERNAL TEMP 32 DULUTH ANGUS  
 GAIN 5 AIR

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	32.5	2.0 US

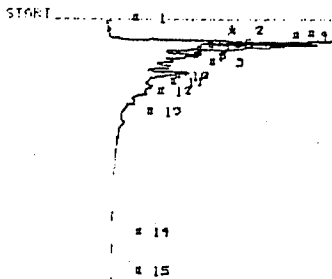
# PHOTOVAC



STOP 8 430.0  
 SAMPLE LIBRARY 1 JUL 14 1994 11:44  
 ANALYSIS # 14 J BYRD, JR.  
 INTERNAL TEMP 32 DULUTH ANGUS  
 GAIN 5 021-024 6.5-7.0

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	32.2	3.3 US

# PHOTOVAC



STOP 9 170.0

SAMPLE LIBRARY 1 JUL 14 1934 11:54

INTERNAL TEMP 32 DULUTH ANG

GAIN 5 021-021 11.5-12

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 2 33.1 3.0 US

UNKNOWN 3 38.5 1.8 US

UNKNOWN 4 41.1 2.2 US

UNKNOWN 5 52.2 373.5 PPM

UNKNOWN 6 56.5 154.8 PPM

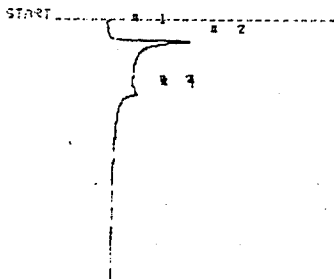
UNKNOWN 7 71.6 126.2 PPM

BENZENE 8 82.2 23.18 PPM

UNKNOWN 10 120.0 44.8 PPM

TOLUENE 12 153.0 18.11 PPM

# PHOTOVAC



STOP 9 400.0

SAMPLE LIBRARY 1 JUL 14 1934 12:1

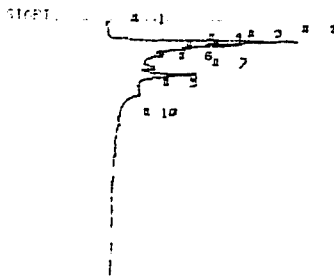
INTERNAL TEMP 33 DULUTH ANG

GAIN 5 021-021 1.5-2.0

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 2 32.5 1.9 US

# PHOTOVAC



STOP 9 106.0

SAMPLE LIBRARY 1 JUL 14 1934 12:15

ANALYSIS # 17 J BYRD, JR.

INTERNAL TEMP 33 DULUTH ANG

GAIN 5 021-020 6.5-7.0

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 2 32.3 3.1 US

UNKNOWN 3 38.3 1.8 US

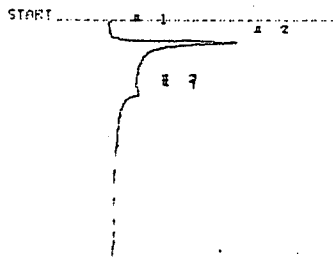
UNKNOWN 4 42.6 316.1 PPM

UNKNOWN 5 52.4 119.3 PPM

UNKNOWN 6 71.7 153.4 PPM

BENZENE 7 82.0 100.0 PPM

# PHOTOVAC



STOP 9 100.0

SAMPLE LIBRARY 1 JUL 14 1934 12:26

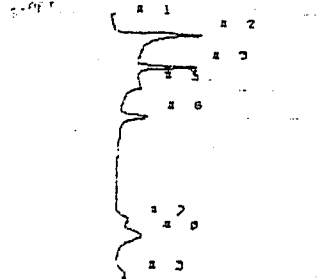
INTERNAL TEMP 33 DULUTH ANG

GAIN 5 021-020 1.5-2.0

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 2 32.6 3.2 US

# PHOTOVAC



STOP 9 100.0

SAMPLE LIBRARY 1 JUL 14 1934 12:36

ANALYSIS # 19 J BYRD, JR.

INTERNAL TEMP 33 DULUTH ANG

GAIN 5 100 PPM

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 2 33.0 2.0 US

BENZENE 3 38.3 32.10 PPM

TOLUENE 6 153.0 36.75 PPM

E-BENZENE 7 222.0 37.84 PPM

PP-XYLENE 8 244.7 100.0 PPM

# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 14 1934 12:37

ANALYSIS # 19 J BYRD, JR.

INTERNAL TEMP 33 DULUTH ANG

GAIN 5 100 PPM

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 2 33.0 2.3 US

BENZENE 3 38.3 32.10 PPM

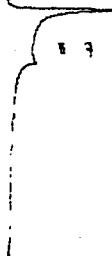
TOLUENE 6 153.0 37.32 PPM

E-BENZENE 7 222.0 37.84 PPM

PP-XYLENE 8 244.7 100.0 PPM

# PHOTOVAC

START 1 2



STOP 2 430.0  
 SAMPLE LIBRARY 1 JUL 14 1934 12:50  
 ANALYSIS # 22 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANGOS  
 GAIN 5 AIR  
 COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 2 22.6 2.1 US

# PHOTOVAC

START 1 2



STOP 2 430.0  
 SAMPLE LIBRARY 1 JUL 14 1934 13:05  
 ANALYSIS # 21 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANGOS  
 GAIN 5 021-018 2.0-2.5  
 COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 2 23.1 0.7 US

# PHOTOVAC

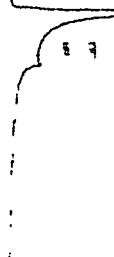
START 1 2



STOP 2 430.0  
 SAMPLE LIBRARY 1 JUL 14 1934 13:46  
 ANALYSIS # 22 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANGOS  
 GAIN 5 021-018 13.5-14  
 COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 2 23.5 10.9 US

# PHOTOVAC

START 1 2



STOP 2 430.0  
 SAMPLE LIBRARY 1 JUL 14 1934 13:58  
 ANALYSIS # 23 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANGOS  
 GAIN 5 021-018 9.5-10.0  
 COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 2 23.1 0.0 US

# PHOTOVAC

START 1 2



STOP 2 430.0  
 SAMPLE LIBRARY 1 JUL 14 1934 14:10  
 ANALYSIS # 24 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANGOS  
 GAIN 5 021-013 14.5-15  
 COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 2 23.2 0.3 US  
 BENZENE 3 22.0 2.311 PPM

# PHOTOVAC

START 1 2



STOP 2 430.0  
 SAMPLE LIBRARY 1 JUL 14 1934 14:20  
 ANALYSIS # 25 J BYRD, JR.  
 INTERNAL TEMP 35 DULUTH ANGOS  
 GAIN 5 021-018 1.5-2.0  
 COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 2 22.0 0.1 US

# PHOTOVAC

START 1 2



STOP 2 430.0  
 SAMPLE LIBRARY 1 JUL 14 1934 14:31  
 ANALYSIS # 26 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANGOS  
 GAIN 5 100 PPM  
 COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 2 22.7 1.3 US  
 BENZENE 3 22.1 100.0 PPM  
 TOLUENE 6 133.2 80.31 PPM  
 ETHYLENE 7 123.0 30.13 PPM  
 PROPYLENE 8 215.2 126.6 PPM

# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 14 1934 14:36  
 ANALYSIS # 26 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANGOS  
 GAIN 5 100 PPM

COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 2 22.7 1.3 US  
 BENZENE 3 22.1 100.0 PPM  
 TOLUENE 6 133.2 80.31 PPM  
 ETHYLENE 7 123.0 30.13 PPM  
 PROPYLENE 8 215.2 126.6 PPM

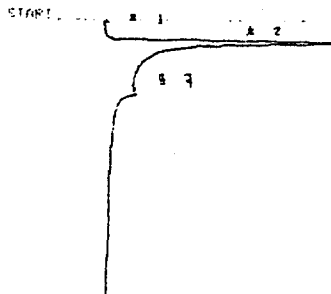
# PHOTOVAC

START 1 2



STOP 2 430.0  
 SAMPLE LIBRARY 1 JUL 14 1934 14:47  
 ANALYSIS # 27 J BYRD, JR.  
 INTERNAL TEMP 35 DULUTH ANGOS  
 GAIN 5 AIR  
 COMPOUND NAME PEAK R.T. AREA/PPM  
 UNKNOWN 2 22.7 1.3 US

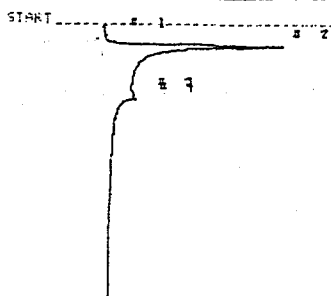
# PHOTOVAC



STOP 2 100.0  
SAMPLE LIBRARY 1 JUL 14 1994 15:57  
ANALYSIS # 20 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANGCS  
GAIN 5 021-016 2.0-2.5

COMPOUND NAME PEAK R.T. AREA/PPM  
UNKNOWN 2 20.0 4.0 US

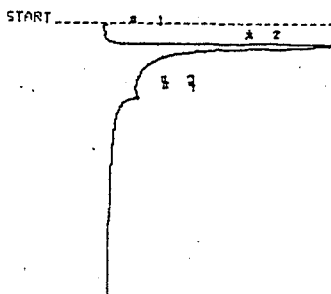
# PHOTOVAC



STOP 2 400.0  
SAMPLE LIBRARY 1 JUL 14 1994 15:9  
ANALYSIS # 20 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANGCS  
GAIN 5 021-016 6.5-7.0

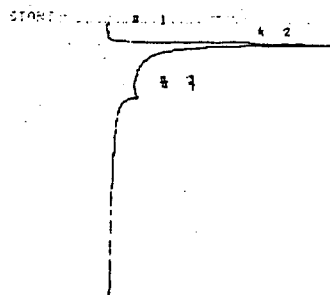
COMPOUND NAME PEAK R.T. AREA/PPM  
UNKNOWN 2 22.2 4.0 US

# PHOTOVAC



STOP 2 100.0  
SAMPLE LIBRARY 1 JUL 14 1994 15:20  
ANALYSIS # 30 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANGCS  
GAIN 5 021-016 10.5-11  
COMPOUND NAME PEAK R.T. AREA/PPM  
UNKNOWN 2 33.1 3.2 US

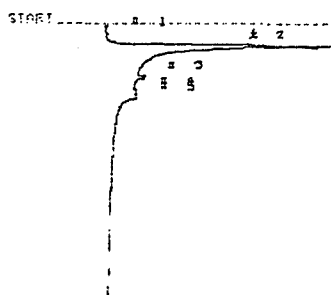
# PHOTOVAC



STOP 2 400.0  
SAMPLE LIBRARY 1 JUL 14 1994 15:30  
ANALYSIS # 31 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANGCS  
GAIN 5 021-013 6.5-7.0

COMPOUND NAME PEAK R.T. AREA/PPM  
UNKNOWN 2 22.4 5.1 US

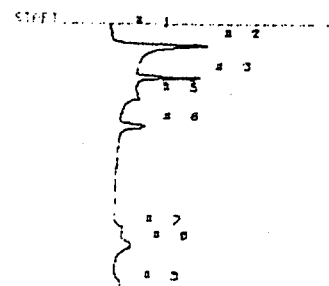
# PHOTOVAC



STOP 2 400.0  
SAMPLE LIBRARY 1 JUL 14 1994 15:40  
ANALYSIS # 32 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANGCS  
GAIN 5 021-019 10.5-11

COMPOUND NAME PEAK R.T. AREA/PPM  
UNKNOWN 2 22.5 4.2 US  
BENZENE 3 20.1 16.4 PPM

# PHOTOVAC



STOP 2 400.0  
SAMPLE LIBRARY 1 JUL 14 1994 15:50  
ANALYSIS # 33 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANGCS  
GAIN 5 100 PPM

COMPOUND NAME PEAK R.T. AREA/PPM  
UNKNOWN 2 22.2 2.0 US  
BENZENE 3 20.1 122.6 PPM  
TOLUENE 6 133.0 105.7 PPM  
BROMOBENZENE 7 210.5 102.1 PPM  
DIBENZYL 8 241.3 164.1 PPM

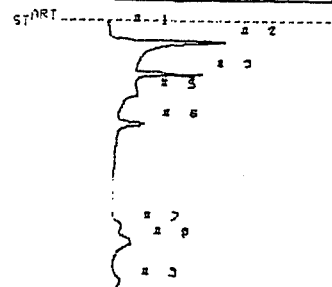
# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 14 1994 15:54  
ANALYSIS # 33 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANGCS  
GAIN 5 100 PPM

COMPOUND NAME PEAK R.T. AREA/PPM  
UNKNOWN 2 22.2 2.0 US  
BENZENE 3 20.1 100.0 PPM  
TOLUENE 6 133.0 90.9 PPM  
BROMOBENZENE 7 210.5 80.2 PPM  
DIBENZYL 8 241.3 170.6 PPM

# PHOTOVAC



STOP 2 400.0  
SAMPLE LIBRARY 1 JUL 14 1994 16:10  
ANALYSIS # 34 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANGCS  
GAIN 5 100 PPM

COMPOUND NAME PEAK R.T. AREA/PPM  
UNKNOWN 2 22.3 2.0 US  
UNKNOWN 3 21.3 244.3 PPM  
UNKNOWN 6 132.2 628.2 PPM  
UNKNOWN 7 210.2 173.8 PPM  
UNKNOWN 8 241.6 624.6 PPM

# PHOTOVAC

1	COMPOUND	10	R.T.	LIMIT
BENZENE	1	81.5	100.0	PPB
TOLUENE	2	150.7	100.0	PPB
E-BENZENE	3	210.7	100.0	PPB
PP-XYLENE	4	241.6	100.0	PPB

# PHOTOVAC

START 1 2

STOP # 120.0  
SAMPLE LIBRARY 1 JUL 14 1994 16:18  
ANALYSIS # 35 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 5 100 PPA

COMPOUND NAME PEAK R.T. AREA/PPB

UNKNOWN 2 122.2 2.0 US

# PHOTOVAC

START 1 2

STOP # 120.0  
SAMPLE LIBRARY 1 JUL 14 1994 17:13  
ANALYSIS # 36 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 5 021-015 1.5-2.0

COMPOUND NAME PEAK R.T. AREA/PPB

UNKNOWN 2 81.9 0.8 US

# PHOTOVAC

START 1 2

STOP # 120.0  
SAMPLE LIBRARY 1 JUL 14 1994 17:19  
ANALYSIS # 37 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 5 021-015 6.5-7.0

COMPOUND NAME PEAK R.T. AREA/PPB

UNKNOWN 2 122.2 2.0 US

# PHOTOVAC

START 1 2

STOP # 120.0  
SAMPLE LIBRARY 1 JUL 14 1994 17:29  
ANALYSIS # 38 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 5 021-015 10.5-11

COMPOUND NAME PEAK R.T. AREA/PPB

UNKNOWN 2 122.2 2.0 US

# PHOTOVAC

START 1 2

STOP # 120.0  
SAMPLE LIBRARY 1 JUL 14 1994 17:42  
ANALYSIS # 39 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 5 021-015 12-13.5

COMPOUND NAME PEAK R.T. AREA/PPB

UNKNOWN 2 122.2 2.0 US

# PHOTOVAC

START 1 2

STOP # 120.0  
SAMPLE LIBRARY 1 JUL 14 1994 17:51  
ANALYSIS # 40 J BYRD, JR.

INTERNAL TEMP 34 DULUTH ANG

GAIN 5 100 PPA

COMPOUND NAME PEAK R.T. AREA/PPB

UNKNOWN 2 122.2 2.0 US

BENZENE 1 81.5 100.0 PPA

TOLUENE 6 150.7 100.0 PPA

E-BENZENE 2 210.7 100.0 PPA

PP-XYLENE 2 241.6 100.0 PPA

# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 14 1994 17:52  
ANALYSIS # 40 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 5 100 PPA

COMPOUND NAME PEAK R.T. AREA/PPB

UNKNOWN 2 122.2 2.0 US

BENZENE 1 81.5 100.0 PPA

TOLUENE 6 150.7 100.0 PPA

E-BENZENE 2 210.7 100.0 PPA

PP-XYLENE 2 241.6 100.0 PPA

# PHOTOVAC

START 1 2

STOP # 120.0  
SAMPLE LIBRARY 1 JUL 14 1994 18:14  
ANALYSIS # 41 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 5 AIR

COMPOUND NAME PEAK R.T. AREA/PPB

UNKNOWN 2 122.2 2.0 US

# PHOTOVAC

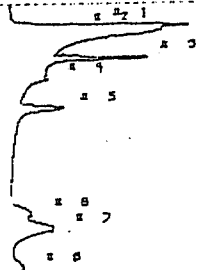
JUL 15 1994 3:23

FIELD: 30  
POWER: 44

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

# PHOTOVAC

START

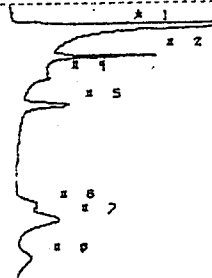


STOP 3 400.0  
SAMPLE LIBRARY 1 JUL 15 1994 3:33  
ANALYSIS # 1 J BYRD, JR.  
INTERNAL TEMP 29 DULUTH ANG  
GAIN 5 100 PPB

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	1	32.5	0.6 US
UNKNOWN	2	38.0	2.8 US
BENZENE	3	82.0	100.0 PPB
TOLUENE	4	150.0	221.0 PPB
E-PENTENE	5	210.1	672.0 PPB
PP-XYLENE	7	240.8	1.023 PPB

# PHOTOVAC

START



STOP 8 430.0  
SAMPLE LIBRARY 1 JUL 15 1994 3:45  
ANALYSIS # 2 J BYRD, JR.  
INTERNAL TEMP 30 DULUTH ANG  
GAIN 5 100 PPB

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	1	33.2	10.6 US
UNKNOWN	2	38.1	1.9 US
UNKNOWN	5	150.0	1.2 US
UNKNOWN	6	211.5	1.2 US
UNKNOWN	7	244.4	2.2 US

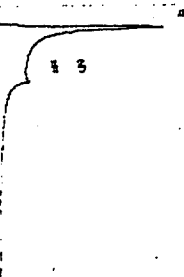
# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

BENZENE	1	80.1	100.0 PPB
TOLUENE	2	155.3	100.0 PPB
ETHYLBENZENE	3	211.6	100.0 PPB
PP-XYLENE	4	224.4	100.0 PPB

# PHOTOVAC

START

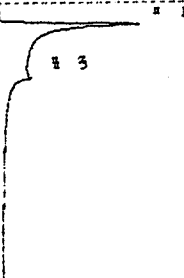


STOP 8 400.0  
SAMPLE LIBRARY 1 JUL 15 1994 3:53  
ANALYSIS # 3 J BYRD, JR.  
INTERNAL TEMP 30 DULUTH ANG  
GAIN 5 AIR

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	1	32.1	4.5 US

# PHOTOVAC

START

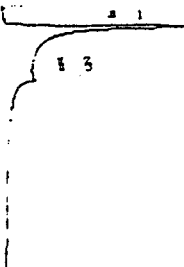


STOP 8 430.0  
SAMPLE LIBRARY 1 JUL 15 1994 10:35  
ANALYSIS # 4 J BYRD, JR.  
INTERNAL TEMP 31 DULUTH ANG  
GAIN 5 021-015 2.0-2.5

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	1	32.1	0.7 US

# PHOTOVAC

START

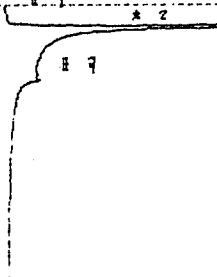


STOP 3 400.0  
SAMPLE LIBRARY 1 JUL 15 1994 10:45  
ANALYSIS # 5 J BYRD, JR.  
INTERNAL TEMP 31 DULUTH ANG  
GAIN 5 021-017 5.5-6.0

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	1	32.2	4.0 US

# PHOTOVAC

START

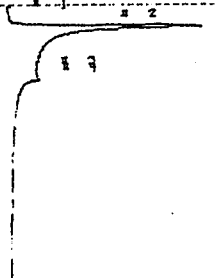


STOP 3 400.0  
SAMPLE LIBRARY 1 JUL 15 1994 10:56  
ANALYSIS # 6 J BYRD, JR.  
INTERNAL TEMP 31 DULUTH ANG  
GAIN 5 021-017 10.5-11

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	2	32.1	2.8 US

# PHOTOVAC

START

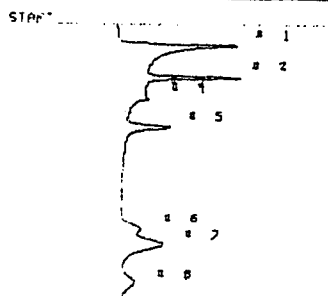


STOP 9 400.0  
SAMPLE LIBRARY 1 JUL 15 1994 11:7  
ANALYSIS # 7 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 5 021-017 14.5-15

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	2	32.2	3.1 US



# PHOTOVAC



STOP 9 430.0  
 SAMPLE LIBRARY 1 JUL 15 1994 11:31  
 ANALYSIS # 8 J BYRD, JR.  
 INTERNAL TEMP 32 DULUTH ANG  
 GAIN 5 100 PPS

COMPOUND NAME PEAK R.T. AREA/PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	31.8	6.6 US
BENZENE	2	80.4	111.2 PPS
TOLUENE	3	136.3	116.2 PPS
ETHYLBENZENE	4	170.0	170.0 PPS
MP-XYLENE	5	226.6	222.6 PPS

# PHOTOVAC

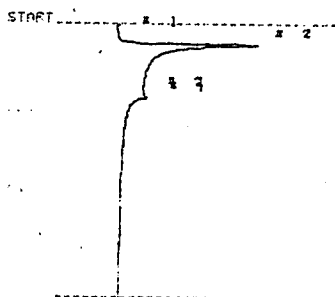
CALIBRATED PEAK 2, BENZENE

SAMPLE LIBRARY 1 JUL 15 1994 11:32  
 ANALYSIS # 8 J BYRD, JR.  
 INTERNAL TEMP 32 DULUTH ANG  
 GAIN 5 100 PPS

COMPOUND NAME PEAK R.T. AREA/PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	31.8	6.6 US
BENZENE	2	80.4	111.2 PPS
TOLUENE	3	136.3	116.2 PPS
ETHYLBENZENE	4	170.0	170.0 PPS
MP-XYLENE	5	226.6	222.6 PPS

# PHOTOVAC

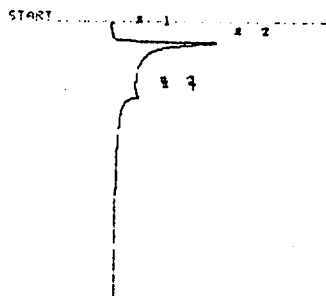


STOP 9 430.0  
 SAMPLE LIBRARY 1 JUL 15 1994 11:42  
 ANALYSIS # 9 J BYRD, JR.  
 INTERNAL TEMP 32 DULUTH ANG  
 GAIN 5 AIR

COMPOUND NAME PEAK R.T. AREA/PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	82.1	5.6 US

# PHOTOVAC

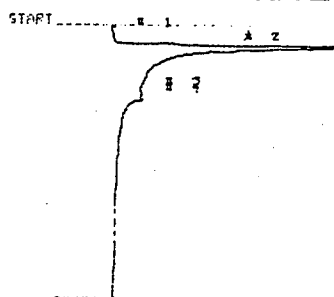


STOP 9 430.0  
 SAMPLE LIBRARY 1 JUL 15 1994 12:47  
 ANALYSIS # 10 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 021-026MW 2-2.5

COMPOUND NAME PEAK R.T. AREA/PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	82.1	5.6 US

# PHOTOVAC

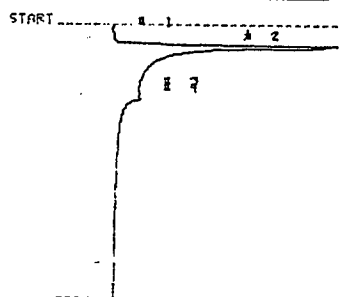


STOP 9 430.0  
 SAMPLE LIBRARY 1 JUL 15 1994 12:57  
 ANALYSIS # 11 J BYRD, JR.  
 INTERNAL TEMP 33 DULUTH ANG  
 GAIN 5 021-026MW 8.5-5

COMPOUND NAME PEAK R.T. AREA/PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	82.1	5.6 US

# PHOTOVAC

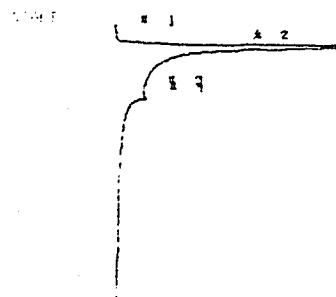


STOP 9 430.0  
 SAMPLE LIBRARY 1 JUL 15 1994 13:27  
 ANALYSIS # 12 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANG  
 GAIN 5 021-026MW 11-11.5

COMPOUND NAME PEAK R.T. AREA/PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	81.9	7.9 US

# PHOTOVAC

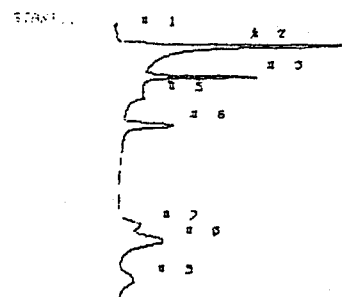


STOP 9 430.0  
 SAMPLE LIBRARY 1 JUL 15 1994 13:10  
 ANALYSIS # 13 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANG  
 GAIN 5 021-026MW 16.5-17

COMPOUND NAME PEAK R.T. AREA/PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	82.1	5.6 US

# PHOTOVAC



STOP 9 430.0  
 SAMPLE LIBRARY 1 JUL 15 1994 13:26  
 ANALYSIS # 14 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANG  
 GAIN 5 100 PPS

COMPOUND NAME PEAK R.T. AREA/PPM

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	2	81.8	6.6 US
BENZENE	3	80.4	111.2 PPS
TOLUENE	4	136.3	116.2 PPS
ETHYLBENZENE	5	170.0	170.0 PPS
MP-XYLENE	6	226.6	222.6 PPS

# PHOTOVAC

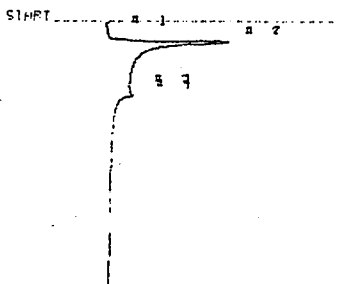
CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 15 1994 13:28  
ANALYSIS # 14 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 5 100 PFB

COMPOUND NAME PEAK R.T. AREA/PFB

UNKNOWN	2	101.0	100.0 PFB
BENZENE	2	101.0	100.0 PFB
TOLUENE	2	101.0	101.0 PFB
ETHYLBENZENE	2	101.0	101.0 PFB

# PHOTOVAC



STOP # 101.0  
SAMPLE LIBRARY 1 JUL 15 1994 13:28  
ANALYSIS # 15 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 5 AIR

COMPOUND NAME PEAK R.T. AREA/PFB

UNKNOWN	2	101.0	100.0 PFB
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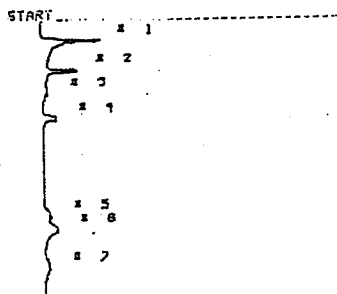
# PHOTOVAC

JUL 18 1994 9:13

FIELD: 30  
POWER: 11

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

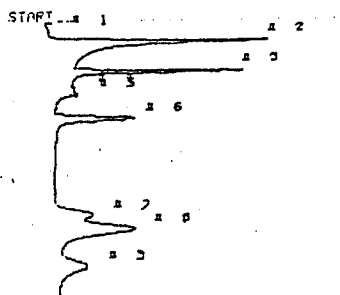
# PHOTOVAC



STOP 8 430.3  
SAMPLE LIBRARY 1 JUL 18 1994 10:14  
ANALYSIS # 1 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 100 PPS

COMPOUND NAME	PEAK	R.T.	AREA	PPS
UNKNOWN	1	31.2	225.0	US
BENZENE	2	77.2	60.0	US
TOLUENE	4	150.3	64.0	US
ETHYLBENZENE	3	90.0	11.0	US
ETHYLBENZENE	5	120.0	200.0	PPS
UNKNOWN	2	90.0	120.0	US

# PHOTOVAC



STOP 8 430.3  
SAMPLE LIBRARY 1 JUL 18 1994 10:53  
ANALYSIS # 2 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PPS

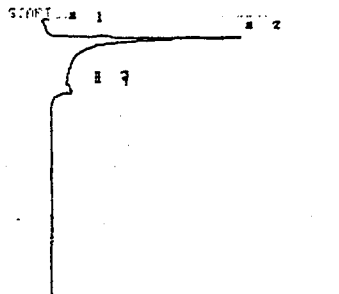
COMPOUND NAME	PEAK	R.T.	AREA	PPS
UNKNOWN	2	31.2	5.4	US
UNKNOWN	3	77.2	2.0	US
UNKNOWN	6	150.3	2.0	US
UNKNOWN	7	220.3	1.7	US
UNKNOWN	8	220.7	4.8	US

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

BENZENE	1	77.2	100.0	PPS
TOLUENE	2	150.3	100.0	PPS
ETHYLBENZENE	3	90.0	100.0	PPS
ETHYLBENZENE	1	105.4	100.0	PPS

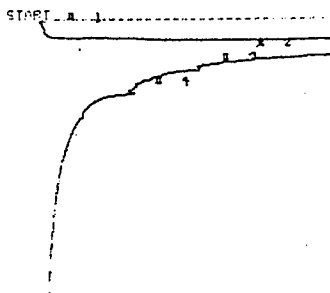
# PHOTOVAC



STOP 8 430.3  
SAMPLE LIBRARY 1 JUL 18 1994 11:17  
ANALYSIS # 3 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 AIR

COMPOUND NAME	PEAK	R.T.	AREA	PPS
UNKNOWN	2	31.2	4.8	US

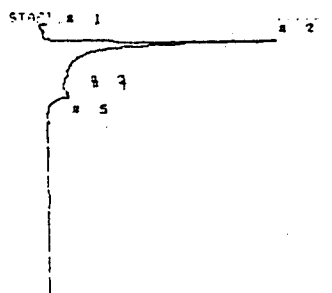
# PHOTOVAC



STOP 8 430.3  
SAMPLE LIBRARY 1 JUL 18 1994 11:15  
ANALYSIS # 4 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 AIR

COMPOUND NAME	PEAK	R.T.	AREA	PPS
UNKNOWN	2	42.3	121.2	US

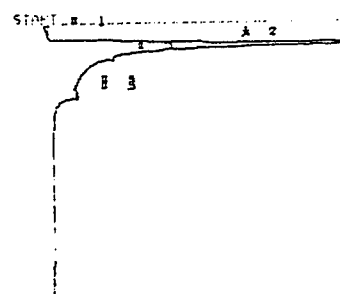
# PHOTOVAC



STOP 8 430.3  
SAMPLE LIBRARY 1 JUL 18 1994 11:44  
ANALYSIS # 5 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 012-0160H 1.5-2

COMPOUND NAME	PEAK	R.T.	AREA	PPS
UNKNOWN	2	31.2	4.8	US

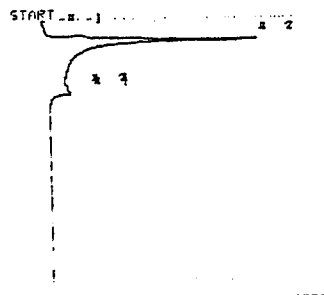
# PHOTOVAC



STOP 8 430.3  
SAMPLE LIBRARY 1 JUL 18 1994 11:54  
ANALYSIS # 6 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 012-0160H 5.5-6

COMPOUND NAME	PEAK	R.T.	AREA	PPS
UNKNOWN	2	31.2	121.2	US

# PHOTOVAC



STOP 8 430.3  
SAMPLE LIBRARY 1 JUL 18 1994 12:17  
ANALYSIS # 7 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 012-0160H 3.5-10

COMPOUND NAME	PEAK	R.T.	AREA	PPS
UNKNOWN	2	31.2	5.8	US

# PHOTOVAC

START 1 2

8 9  
6 5

STOP 2 452.0  
SAMPLE LIBRARY 1 JUL 18 1994 12:06  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 017-0158H 1-1.5

COMPOUND NAME PEAK R.T. REFERENCE  
UNKNOWN 2 92.2 3.6 00

# PHOTOVAC

START 1 2

8 9

STOP 2 452.0  
SAMPLE LIBRARY 1 JUL 18 1994 12:46  
ANALYSIS # 9 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 017-0158H 5.5-6

COMPOUND NAME PEAK R.T. REFERENCE  
UNKNOWN 2 92.2 3.6 00

# PHOTOVAC

START 1 2

8 9

STOP 2 452.0  
SAMPLE LIBRARY 1 JUL 18 1994 12:56  
ANALYSIS # 10 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PFB

COMPOUND NAME PEAK R.T. REFERENCE  
UNKNOWN 2 92.2 3.6 00  
BENZENE 1 22.6 22.50 PFB  
TOLUENE 6 150.3 150.60 PFB  
ETHYLBENZENE 8 202.8 212.2 PFB

# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 18 1994 12:58  
ANALYSIS # 10 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PFB

COMPOUND NAME PEAK R.T. REFERENCE  
UNKNOWN 2 92.2 3.6 00  
BENZENE 1 22.6 22.50 PFB  
TOLUENE 6 150.3 150.60 PFB  
ETHYLBENZENE 8 202.8 212.2 PFB

# PHOTOVAC

1 2 3

8 9

SAMPLE LIBRARY 1 JUL 18 1994 13:20  
ANALYSIS # 12 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 AIR

COMPOUND NAME PEAK R.T. REFERENCE  
UNKNOWN 2 92.2 3.6 00

# PHOTOVAC

START 1 2 3 4

8 9

STOP 2 452.0  
SAMPLE LIBRARY 1 JUL 18 1994 13:28  
ANALYSIS # 13 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 017-0158H 5.5-6

COMPOUND NAME PEAK R.T. REFERENCE  
UNKNOWN 2 92.2 3.6 00  
UNKNOWN 1 150.3 150.60

# PHOTOVAC

START 2 3

8 9

STOP 2 452.0  
SAMPLE LIBRARY 1 JUL 18 1994 14:40  
ANALYSIS # 14 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 017-0158H 3-3.5

COMPOUND NAME PEAK R.T. REFERENCE  
UNKNOWN 2 92.2 3.6 00

# PHOTOVAC

START 1 2

8 9

STOP 2 452.0  
SAMPLE LIBRARY 1 JUL 18 1994 13:3  
ANALYSIS # 11 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PFB

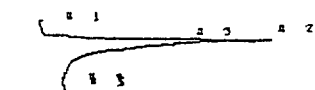
COMPOUND NAME PEAK R.T. REFERENCE  
UNKNOWN 2 92.2 3.6 00  
UNKNOWN 2 72.6 72.50  
UNKNOWN 6 150.3 150.60  
UNKNOWN 2 202.8 212.2  
UNKNOWN 8 222.8 212.2

# PHOTOVAC

1 COMPOUND 10 = R.T. LIMIT

BENZENE 1 22.6 100.0 PFB  
TOLUENE 2 150.3 100.0 PFB  
ETHYLBENZENE 3 200.8 100.0 PFB  
PP-XYLENE 4 223.0 100.0 PFB

# PHOTOVAC

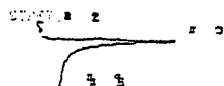


STOP # 432.0  
 SAMPLE LIBRARY 1 JUL 18 1994 19:52  
 ANALYSIS # 15 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANG  
 GAIN 10 012-0138M 5.5-6

COMPOUND NAME PEAK R.T. AREA/WT

UNKNOWN 1 1.5 1.0 1.0

# PHOTOVAC

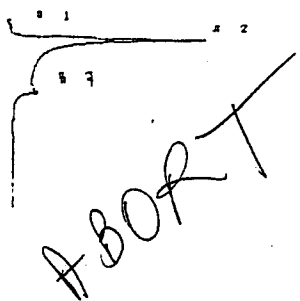


STOP # 432.0  
 SAMPLE LIBRARY 1 JUL 18 1994 15:21  
 ANALYSIS # 16 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANG  
 GAIN 10 012-0138M 2-2.5

COMPOUND NAME PEAK R.T. AREA/WT

UNKNOWN 1 1.5 1.0 1.0

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 18 1994 15:03  
 ANALYSIS # 16 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANG  
 GAIN 10 012-0138M 3.5-10

COMPOUND NAME PEAK R.T. AREA/WT

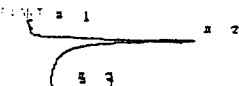
UNKNOWN 1 1.5 1.0 1.0

STOP # 432.0  
 SAMPLE LIBRARY 1 JUL 18 1994 15:05  
 ANALYSIS # 17 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANG  
 GAIN 10 012-0138M 3.5-10

COMPOUND NAME PEAK R.T. AREA/WT

UNKNOWN 1 1.5 1.0 1.0

# PHOTOVAC

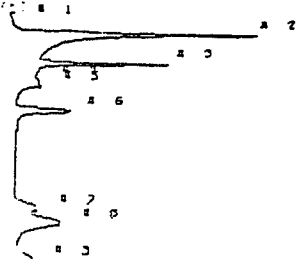


STOP # 432.0  
 SAMPLE LIBRARY 1 JUL 18 1994 15:44  
 ANALYSIS # 18 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANG  
 GAIN 10 012-0138M 3.5-10

COMPOUND NAME PEAK R.T. AREA/WT

UNKNOWN 1 1.5 1.0 1.0

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 18 1994 15:53  
 ANALYSIS # 19 J BYRD, JR.  
 INTERNAL TEMP 34 DULUTH ANG  
 GAIN 10 100 FFB

COMPOUND NAME PEAK R.T. AREA/WT

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

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UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

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UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

UNKNOWN 1 1.5 1.0 1.0

# PHOTOVAC

JUL 13 1994 7:20

FIELD: 30  
POWER: 42

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 9:28  
ANALYSIS # 2 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 100 PPS

# PHOTOVAC

JUL 13 1994 7:23

FIELD: 30  
POWER: 43

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 9:30  
ANALYSIS # 3 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 100 PPS

COMPOUND NAME	PEAK	R.T.	AREA
BENZENE	1	70.6	100.0
TOLUENE	2	156.3	100.0
E-BENZENE	3	202.1	100.0
PF-XYLENE	4	223.6	100.0

# PHOTOVAC

1	COMPOUND	10	R.T.	LIMIT
BENZENE	1	70.6	100.0	PPS
TOLUENE	2	156.3	100.0	PPS
E-BENZENE	3	202.1	100.0	PPS
PF-XYLENE	4	223.6	100.0	PPS

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 9:51  
ANALYSIS # 4 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 AIR

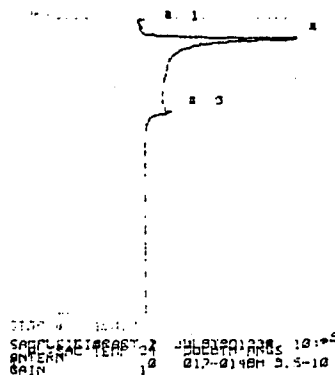
# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 10:3  
ANALYSIS # 5 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 017-0149H 2-2.5

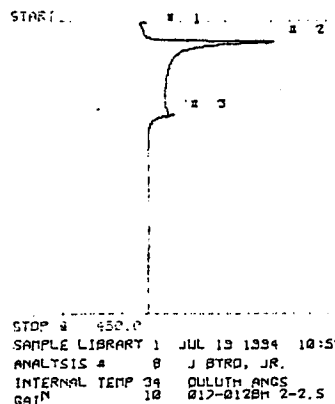
# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 10:19  
ANALYSIS # 6 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 017-0149H 4.5-5

# PHOTOVAC

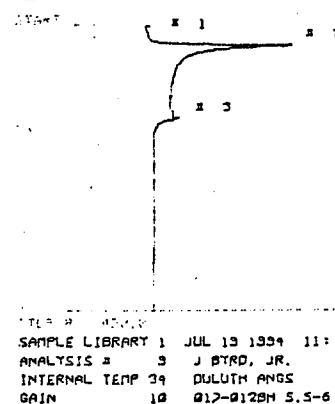


# PHOTOVAC



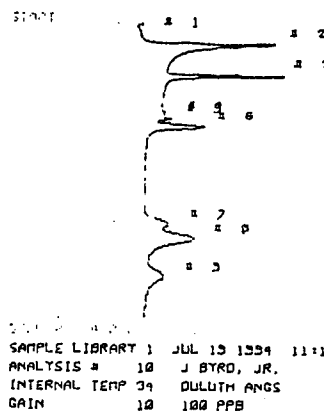
COMPOUND NAME PEAK R.T. LIMIT

# PHOTOVAC



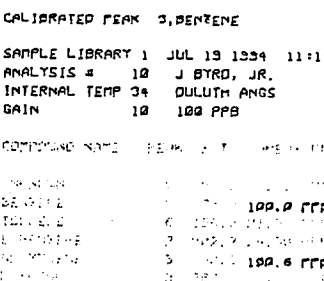
COMPOUND NAME PEAK R.T. LIMIT

# PHOTOVAC



COMPOUND NAME PEAK R.T. LIMIT

# PHOTOVAC

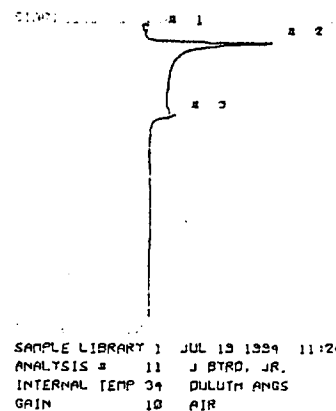


COMPOUND NAME PEAK R.T. LIMIT

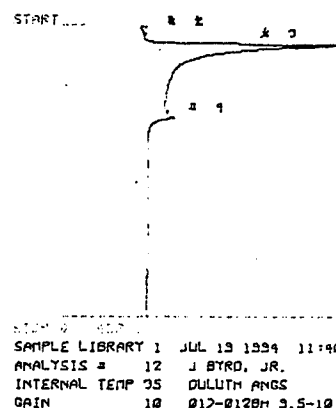
# PHOTOVAC

1	COMPOUND	ID #	R.T.	LIMIT
1	BENZENE	1	70.5	100.0 PPB
2	TOLUENE	2	156.1	100.0 PPB
3	E-BENZENE	3	302.0	100.0 PPB
4	PF-XYLENE	4	325.2	100.0 PPB
5	D-XYLENE	5	366.3	100.0 PPB

# PHOTOVAC

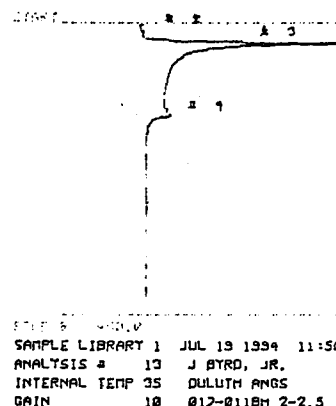


# PHOTOVAC



COMPOUND NAME PEAK R.T. LIMIT

# PHOTOVAC



COMPOUND NAME PEAK R.T. LIMIT

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 12:1  
ANALYSIS # 14 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 012-0110m 5.5-6

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 12:10  
ANALYSIS # 15 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 012-0110m 3.5-10

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 12:51  
ANALYSIS # 16 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 FFB

COMPOUND NAME PEAK R.T. AREA  
BENZENE 1 78.0 100.0 FFB  
TOLUENE 2 152.3 100.0 FFB  
E-BENZENE 3 311.0 100.0 FFB  
M-XYLENE 4 333.0 100.0 FFB

# PHOTOVAC

CALIBRATED PEAK 3, DENEZENE

SAMPLE LIBRARY 1 JUL 13 1994 12:53  
ANALYSIS # 16 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 FFB

100.0 FFB  
150.1 FFB

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 13:4  
ANALYSIS # 17 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 FFB

COMPOUND NAME PEAK R.T. AREA  
BENZENE 1 78.0 100.0 FFB  
TOLUENE 2 152.3 100.0 FFB  
E-BENZENE 3 311.0 100.0 FFB  
M-XYLENE 4 333.0 100.0 FFB

# PHOTOVAC

1 COMPOUND 10 # R.T. LIMIT  
BENZENE 1 78.0 100.0 FFB  
TOLUENE 2 152.3 100.0 FFB  
E-BENZENE 3 311.0 100.0 FFB  
M-XYLENE 4 333.0 100.0 FFB

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 13:18  
ANALYSIS # 18 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 AIR

# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 13:53  
ANALYSIS # 19 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 012-0100m 4.5-5

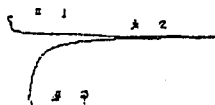
# PHOTOVAC

SAMPLE LIBRARY 1 JUL 13 1994 14:53  
ANALYSIS # 20 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 012-0100m 3.5-10

COMPOUND NAME PEAK R.T. AREA  
BENZENE 1 78.0 100.0 FFB  
TOLUENE 2 152.3 100.0 FFB  
E-BENZENE 3 311.0 100.0 FFB  
M-XYLENE 4 333.0 100.0 FFB



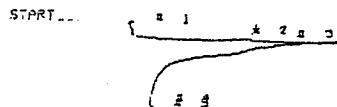
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 13 1994 15:3  
ANALYSIS # 21 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 017-0128H 1.5-2

UNKNOWN 2 31.2 4.3 US  
UNKNOWN 2 35.0 2.0 US

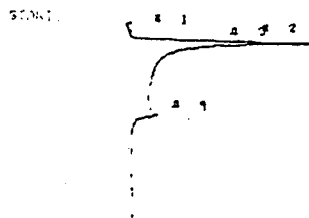
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 13 1994 15:18  
ANALYSIS # 22 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 017-0128H 5.5-6

UNKNOWN 2 31.2 4.3 US  
UNKNOWN 2 35.0 2.0 US

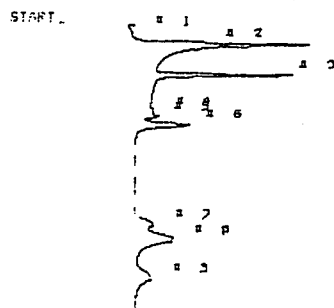
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 13 1994 15:40  
ANALYSIS # 23 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 017-0128H 5.5-10

UNKNOWN 2 31.2 4.3 US  
UNKNOWN 2 35.0 2.0 US

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 13 1994 15:54  
ANALYSIS # 24 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 100 PFB

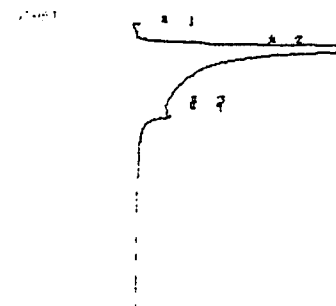
COMPONENT NAME	PEAK	RT	AREA
UNKNOWN	1	31.2	4.3 US
BENZENE	2	35.0	2.0 US
UNKNOWN	3	38.0	1.0 US
UNKNOWN	4	41.0	1.0 US
UNKNOWN	5	44.0	1.0 US
UNKNOWN	6	47.0	1.0 US
UNKNOWN	7	50.0	1.0 US
UNKNOWN	8	53.0	1.0 US
UNKNOWN	9	56.0	1.0 US
UNKNOWN	10	59.0	1.0 US

# PHOTOVAC

CALIBRATED PEAK 0.BENZENE  
SAMPLE LIBRARY 1 JUL 13 1994 15:58  
ANALYSIS # 24 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 100 PFB

COMPONENT NAME	PEAK	RT	AREA
UNKNOWN	1	31.2	4.3 US
BENZENE	2	35.0	2.0 US
UNKNOWN	3	38.0	1.0 US
UNKNOWN	4	41.0	1.0 US
UNKNOWN	5	44.0	1.0 US
UNKNOWN	6	47.0	1.0 US
UNKNOWN	7	50.0	1.0 US
UNKNOWN	8	53.0	1.0 US
UNKNOWN	9	56.0	1.0 US
UNKNOWN	10	59.0	1.0 US

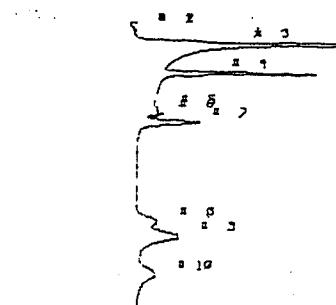
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 13 1994 16:3  
ANALYSIS # 25 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 AIR

UNKNOWN 2 31.2 4.3 US  
UNKNOWN 2 35.0 2.0 US

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 13 1994 16:18  
ANALYSIS # 26 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 100 PFB

COMPONENT NAME	PEAK	RT	AREA
UNKNOWN	1	31.2	4.3 US
BENZENE	2	35.0	2.0 US
UNKNOWN	3	38.0	1.0 US
UNKNOWN	4	41.0	1.0 US
UNKNOWN	5	44.0	1.0 US
UNKNOWN	6	47.0	1.0 US
UNKNOWN	7	50.0	1.0 US
UNKNOWN	8	53.0	1.0 US
UNKNOWN	9	56.0	1.0 US
UNKNOWN	10	59.0	1.0 US

# PHOTOVAC

CALIBRATED PEAK 1.BENZENE  
SAMPLE LIBRARY 1 JUL 13 1994 16:13  
ANALYSIS # 26 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 100 PFB

COMPONENT NAME	PEAK	RT	AREA
UNKNOWN	1	31.2	4.3 US
BENZENE	2	35.0	2.0 US
UNKNOWN	3	38.0	1.0 US
UNKNOWN	4	41.0	1.0 US
UNKNOWN	5	44.0	1.0 US
UNKNOWN	6	47.0	1.0 US
UNKNOWN	7	50.0	1.0 US
UNKNOWN	8	53.0	1.0 US
UNKNOWN	9	56.0	1.0 US
UNKNOWN	10	59.0	1.0 US

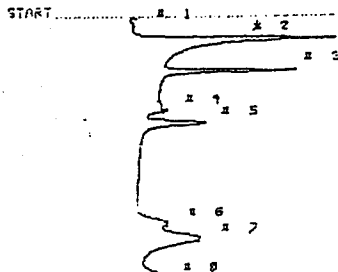
# PHOTOVAC

JUL 20 1994 10:33

FIELD: 30  
POWER: 43

SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

# PHOTOVAC



STOP # 450.0

SAMPLE LIBRARY 1 JUL 20 1994 11:5  
ANALYSIS # 1 J BYRD, JR.  
INTERNAL TEMP 23 DULUTH ANG  
GAIN 10 PFB

COMPOUND NAME PEAK S.T. AREA

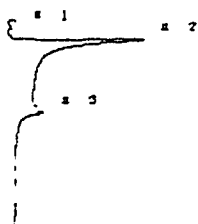
COMPOUND	PEAK	S.T.	AREA
UNKNOWN	1	22.1	5.2
UNKNOWN	2	163.3	100.0
UNKNOWN	3	320.3	100.0
UNKNOWN	4	343.1	100.0

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

COMPOUND	PEAK	S.T.	AREA
BENZENE	1	22.1	5.2
TOLUENE	2	163.3	100.0
E-BENZENE	3	320.3	100.0
PF-XYLENE	4	343.1	100.0

# PHOTOVAC

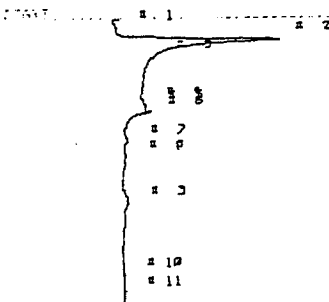


SAMPLE LIBRARY 1 JUL 20 1994 11:21  
ANALYSIS # 2 J BYRD, JR.  
INTERNAL TEMP 31 DULUTH ANG  
GAIN 10 AIR

COMPOUND NAME PEAK S.T. AREA

COMPOUND	PEAK	S.T.	AREA
UNKNOWN	1	22.1	5.2
UNKNOWN	2	163.3	100.0
UNKNOWN	3	320.3	100.0

# PHOTOVAC



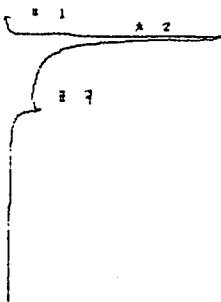
STOP # 450.0

SAMPLE LIBRARY 1 JUL 20 1994 11:40  
ANALYSIS # 3 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 017-018BH 2-2.5

COMPOUND NAME PEAK S.T. AREA

COMPOUND	PEAK	S.T.	AREA
UNKNOWN	1	22.1	5.2
UNKNOWN	2	163.3	100.0
UNKNOWN	3	320.3	100.0
UNKNOWN	4	343.1	100.0

# PHOTOVAC

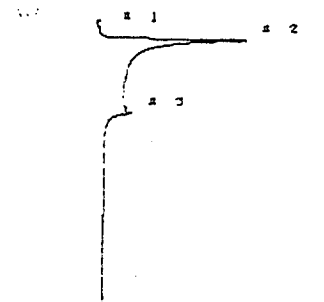


SAMPLE LIBRARY 1 JUL 20 1994 11:57  
ANALYSIS # 4 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 017-018BH 2-2.5

COMPOUND NAME PEAK S.T. AREA

COMPOUND	PEAK	S.T.	AREA
UNKNOWN	1	22.1	5.2
UNKNOWN	2	163.3	100.0
UNKNOWN	3	320.3	100.0

# PHOTOVAC



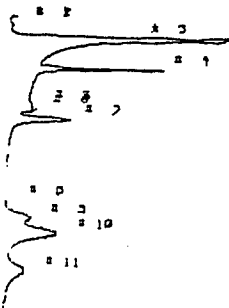
STOP # 450.0

SAMPLE LIBRARY 1 JUL 20 1994 12:25  
ANALYSIS # 5 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 017-018BH 3.5-10

COMPOUND NAME PEAK S.T. AREA

COMPOUND	PEAK	S.T.	AREA
UNKNOWN	1	22.1	5.2
UNKNOWN	2	163.3	100.0
UNKNOWN	3	320.3	100.0

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 12:15  
ANALYSIS # 7 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PPS

151.0 PPS

# PHOTOVAC

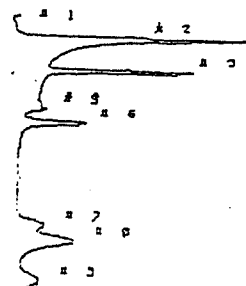
CALIBATED PEAK 1-PENTENE

SAMPLE LIBRARY 1 JUL 20 1994 12:16  
ANALYSIS # 7 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PPS

100.0 PPS

163.4 PPS

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 13:13  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PPS

113.1 PPS  
110.0 PPS  
107.0 PPS  
102.0 PPS

# PHOTOVAC

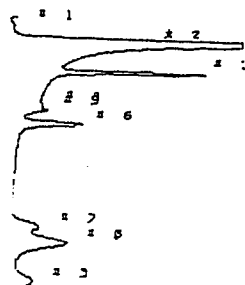
CALIBATED PEAK 3-BENZENE

SAMPLE LIBRARY 1 JUL 20 1994 13:14  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PPS

100.0 PPS

165.3 PPS

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 13:15  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PPS

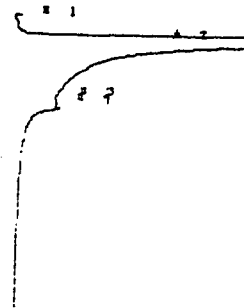
100.0 PPS  
165.3 PPS  
100.0 PPS  
165.3 PPS

# PHOTOVAC

1 COMPOUND 10 A R.T. LIMIT

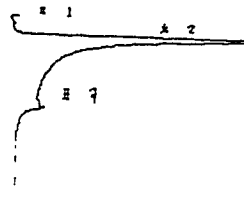
BENZENE 1 83.2 100.0 PPS  
TOLUENE 2 165.1 100.0 PPS  
E-BENZENE 3 325.1 100.0 PPS  
PP-XYLENE 1 340.8 100.0 PPS

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 13:26  
ANALYSIS # 10 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 AIR

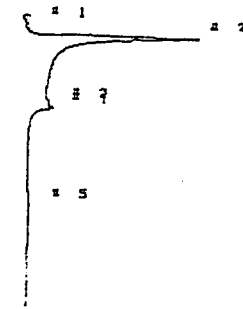
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 13:45  
ANALYSIS # 11 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 012-0135H 1.5-2

100.0 PPS  
165.3 PPS

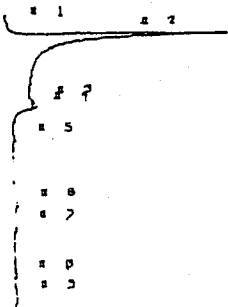
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 14:23  
ANALYSIS # 12 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 012-0135H 5.0-6

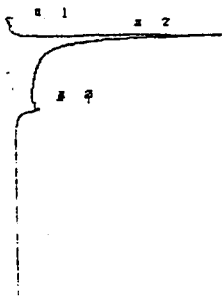
100.0 PPS  
165.3 PPS

# PHOTOVAC



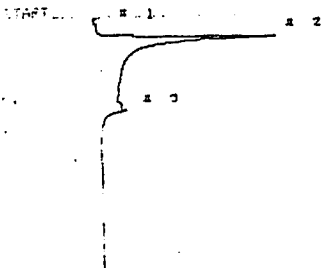
SAMPLE LIBRARY 1 JUL 20 1994 14:03  
ANALYSIS # 13 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 017-0198H 3.5-10

# PHOTOVAC



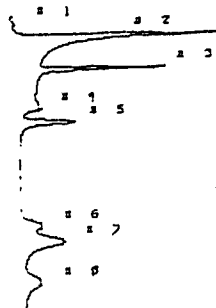
SAMPLE LIBRARY 1 JUL 20 1994 14:56  
ANALYSIS # 14 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 017-0208H 2-2.5

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 15:20  
ANALYSIS # 15 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 017-0208H 5.5-6

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 15:00  
ANALYSIS # 16 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 100 PPB

150.1 PPB

# PHOTOVAC

CALIBRATED PEAK 3,PENTENE

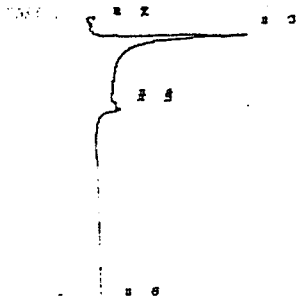
SAMPLE LIBRARY 1 JUL 20 1994 15:02  
ANALYSIS # 16 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 100 PPB

100.0 PPB

101.1 PPB

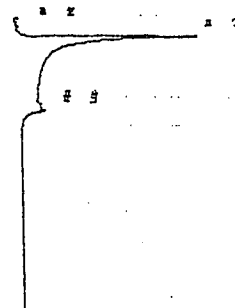
123.3 PPB

# PHOTOVAC



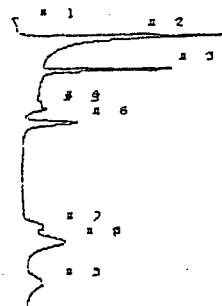
SAMPLE LIBRARY 1 JUL 20 1994 15:42  
ANALYSIS # 17 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 AIR

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 15:52  
ANALYSIS # 18 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 017-0208H 3.5-10

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1994 16: 2  
ANALYSIS # 19 J BYRD, JR.  
INTERNAL TEMP 37 DULUTH ANG  
GAIN 10 100 PPB

100.0 PPB

101.1 PPB

102.2 PPB

121.3 PPB

# PHOTOVAC

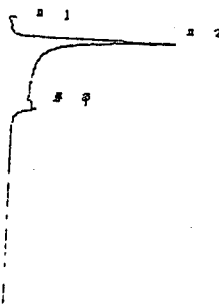
CALIBRATED PEAK 3-PENTENE

SAMPLE LIBRARY 1 JUL 20 1954 16: 5  
 ANALYSIS # 15 J BYRD, JR.  
 INTERNAL TEMP 37 DULUTH ANG  
 GAIN 10 100 PPS

100.0 PPS

169.6 PPS

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 20 1954 16:19  
 ANALYSIS # 20 J BYRD, JR.  
 INTERNAL TEMP 37 DULUTH ANG  
 GAIN 10 AIR

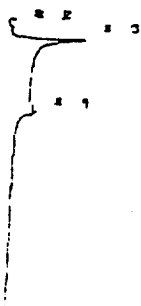
# PHOTOVAC

JUL 23 1994 10:23

FIELD: 00  
POWER: 43

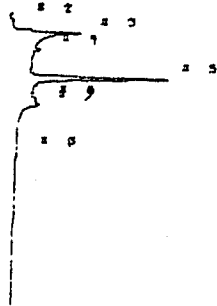
SAMPLE	0.0	10.0
CAL	0.0	0.0
EVENT 3	0.0	100.0
EVENT 4	0.0	0.0
EVENT 5	0.0	0.0
EVENT 6	0.0	0.0
EVENT 7	0.0	0.0
EVENT 8	0.0	0.0

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 11:13  
ANALYSIS # 2 J BYRD, JR.  
INTERNAL TEMP 32 DULUTH ANG  
GAIN 10 021-0078 AIR

# PHOTOVAC

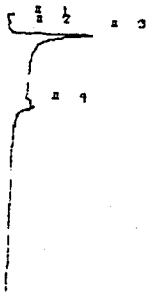


SAMPLE LIBRARY 1 JUL 23 1994 11:42  
ANALYSIS # 5 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 021-019 DU

# PHOTOVAC

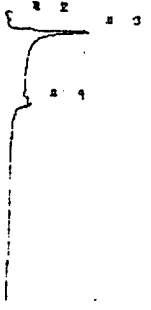
1 COMPOUND ID # R.T. LIMIT

# PHOTOVAC



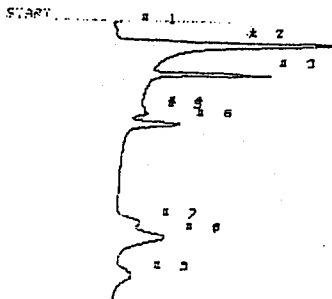
SAMPLE LIBRARY 1 JUL 23 1994 11:23  
ANALYSIS # 3 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 021-003 DU

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 11:52  
ANALYSIS # 6 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 021-026 DU

# PHOTOVAC

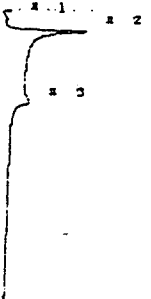


SAMPLE LIBRARY 1 JUL 23 1994 11:1  
ANALYSIS # 1 J BYRD, JR.  
INTERNAL TEMP 31 DULUTH ANG  
GAIN 10 100 PFB

COMPOUND NAME PEAK R.T. OPERATOR

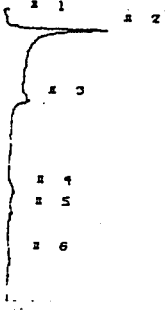
COMPOUND NAME	PEAK R.T.	OPERATOR
BENZENE	10.0	J BYRD, JR.
TOLUENE	153.5	J BYRD, JR.
E-BENZENE	312.5	J BYRD, JR.
PF-XYLENE	335.0	J BYRD, JR.

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 11:32  
ANALYSIS # 4 J BYRD, JR.  
INTERNAL TEMP 33 DULUTH ANG  
GAIN 10 021-010 DU

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 12:2  
ANALYSIS # 7 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 018-0060H 2.5

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

COMPOUND NAME	PEAK R.T.	OPERATOR
BENZENE	10.0	J BYRD, JR.
TOLUENE	153.5	J BYRD, JR.
E-BENZENE	312.5	J BYRD, JR.
PF-XYLENE	335.0	J BYRD, JR.

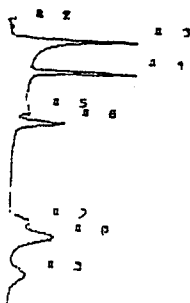
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 12:13  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 100 PPS

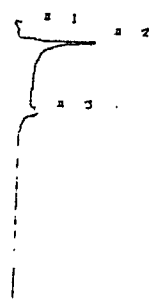
100.0 PPS

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 12:26  
ANALYSIS # 3 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 100 PPS

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 12:42  
ANALYSIS # 11 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 018-0000 1.2

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

BENZENE	1	90.6	100.0	PPS
TOLUENE	2	153.7	100.0	PPS
E-BENZENE	3	317.1	100.0	PPS
MP-XYLENE	4	335.6	100.0	PPS
O-XYLENE	5	335.3	100.0	PPS

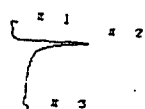
# PHOTOVAC

CALIBRATED PEAK 2, BENZENE

SAMPLE LIBRARY 1 JUL 23 1994 12:14  
ANALYSIS # 8 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 100 PPS

100.0 PPS

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 12:32  
ANALYSIS # 10 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 AIR

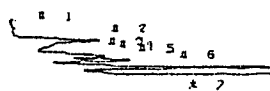
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 12:57  
ANALYSIS # 12 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 017-0100 1.5-2.5

INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 017-0100 1.5-2.5

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 13:06  
ANALYSIS # 13 J BYRD, JR.  
INTERNAL TEMP 34 DULUTH ANG  
GAIN 10 018-0078H 2.5

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

BENZENE	1	89.6	100.0	PPB
TOLUENE	2	153.7	100.0	PPB
E-BENZENE	3	310.1	100.0	PPB
MP-XYLENE	4	335.6	100.0	PPB
O-XYLENE	5	335.3	100.0	PPB

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

# PHOTOVAC



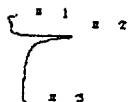
SAMPLE LIBRARY 1 JUL 23 1994 15:37  
ANALYSIS # 14 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PPS

# PHOTOVAC

1 COMPOUND ID # R.T. LIMIT

BENZENE	1	81.6	100.0	PPB
TOLUENE	2	161.7	100.0	PPB
E-BENZENE	3	312.3	100.0	PPB
MP-XYLENE	4	341.0	100.0	PPB
O-XYLENE	5	401.7	100.0	PPB

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 15:50  
ANALYSIS # 15 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 AIR

# PHOTOVAC



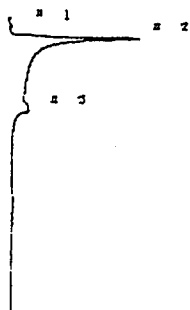
SAMPLE LIBRARY 1 JUL 23 1994 16:00  
ANALYSIS # 16 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 021-0045D

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 16:11  
ANALYSIS # 17 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 021-0045D

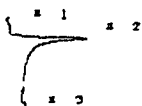
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 16:21  
ANALYSIS # 18 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 021-0065D

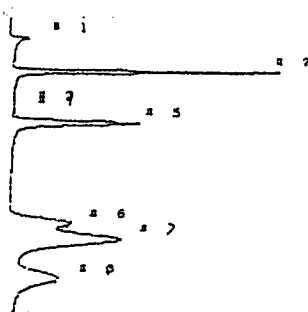


# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 16:31  
ANALYSIS # 13 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 021-00250

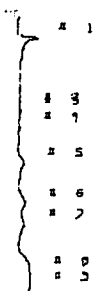
# PHOTOVAC



STOP # 1000  
SAMPLE LIBRARY 1 JUL 23 1994 17: 5  
ANALYSIS # 22 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 1 PPM

COMPOUND NAME PEAK P.T. AREA  
BENZENE 1 81.2 1.000 PPM  
TOLUENE 2 161.2 1.000 PPM  
E-BENZENE 3 312.0 1.000 PPM  
NP-XYLENE 4 319.1 1.000 PPM

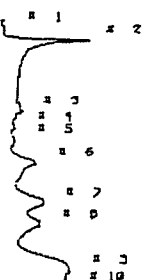
# PHOTOVAC



STOP # 1000  
SAMPLE LIBRARY 1 JUL 23 1994 17:27  
ANALYSIS # 24 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 018-00280.8-1.3

COMPOUND NAME PEAK P.T. AREA  
BENZENE 1 81.2 1.000 PPM  
TOLUENE 2 161.2 1.000 PPM  
E-BENZENE 3 312.0 1.000 PPM  
NP-XYLENE 4 319.1 1.000 PPM

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 16:41  
ANALYSIS # 20 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 018-00280.8-1.3

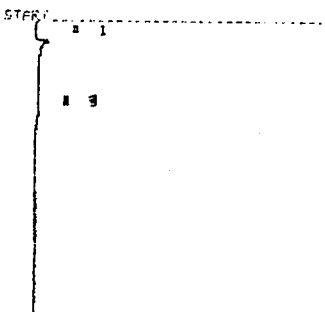
COMPOUND NAME PEAK P.T. AREA  
BENZENE 1 81.2 1.000 PPM  
TOLUENE 2 161.2 1.000 PPM  
E-BENZENE 3 312.0 1.000 PPM  
NP-XYLENE 4 319.1 1.000 PPM  
BENZENE 5 312.0 1.000 PPM  
TOLUENE 6 319.1 1.000 PPM  
E-BENZENE 7 312.0 1.000 PPM  
NP-XYLENE 8 319.1 1.000 PPM  
BENZENE 9 312.0 1.000 PPM  
TOLUENE 10 319.1 1.000 PPM  
E-BENZENE 11 312.0 1.000 PPM  
NP-XYLENE 12 319.1 1.000 PPM

# PHOTOVAC

1 COMPOUND ID # P.T. LIMIT

BENZENE 1 81.2 1.000 PPM  
TOLUENE 2 161.2 1.000 PPM  
E-BENZENE 3 312.0 1.000 PPM  
NP-XYLENE 4 319.1 1.000 PPM

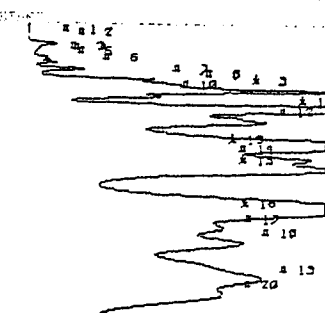
# PHOTOVAC



STOP # 1000  
SAMPLE LIBRARY 1 JUL 23 1994 17:17  
ANALYSIS # 23 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 AIR

COMPOUND NAME PEAK P.T. AREA  
BENZENE 1 81.2 1.000 PPM  
TOLUENE 2 161.2 1.000 PPM  
E-BENZENE 3 312.0 1.000 PPM  
NP-XYLENE 4 319.1 1.000 PPM

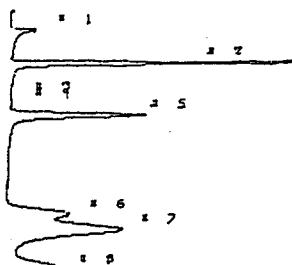
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 17:37  
ANALYSIS # 25 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 018-00280.8-1.3

COMPOUND NAME PEAK P.T. AREA  
BENZENE 1 81.2 1.000 PPM  
TOLUENE 2 161.2 1.000 PPM  
E-BENZENE 3 312.0 1.000 PPM  
NP-XYLENE 4 319.1 1.000 PPM  
BENZENE 5 312.0 1.000 PPM  
TOLUENE 6 319.1 1.000 PPM  
E-BENZENE 7 312.0 1.000 PPM  
NP-XYLENE 8 319.1 1.000 PPM  
BENZENE 9 312.0 1.000 PPM  
TOLUENE 10 319.1 1.000 PPM  
E-BENZENE 11 312.0 1.000 PPM  
NP-XYLENE 12 319.1 1.000 PPM

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 17:50  
ANALYSIS # 26 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 2 1 PPM BTEX

COMPOUND NAME PEAK # RESPONSE  
BENZENE 1 1.023 PPM  
TOLUENE 2 1.028 PPM  
XYLENE 3 1.026 PPM  
METHYLBENZENE 4 2.053 PPM

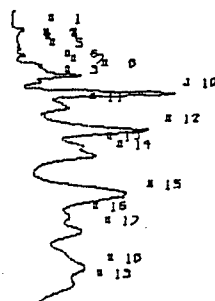
# PHOTOVAC

CALIBRATED PEAK 2, BENTENE

SAMPLE LIBRARY 1 JUL 23 1994 17:52  
ANALYSIS # 26 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 1 PPM BTEX

COMPOUND NAME PEAK # RESPONSE  
BENZENE 1 1.000 PPM  
TOLUENE 2 1.000 PPM  
XYLENE 3 1.000 PPM  
METHYLBENZENE 4 1.000 PPM

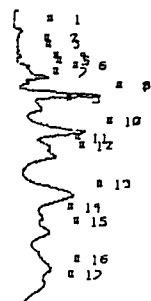
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 18:14  
ANALYSIS # 27 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 2 018-0028H 2.5

COMPOUND NAME PEAK # RESPONSE  
BENZENE 1 1.022 PPM  
TOLUENE 2 1.028 PPM  
XYLENE 3 1.026 PPM  
METHYLBENZENE 4 2.053 PPM

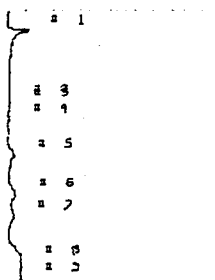
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 18:30  
ANALYSIS # 28 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 2 018-0028H 2.5

COMPOUND NAME PEAK # RESPONSE  
BENZENE 1 1.022 PPM  
TOLUENE 2 1.028 PPM  
XYLENE 3 1.026 PPM  
METHYLBENZENE 4 2.053 PPM

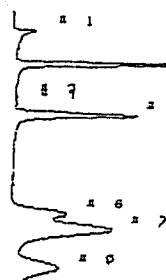
# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 18:18  
ANALYSIS # 28 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 2 018-0028H 0.8-1.3

COMPOUND NAME PEAK # RESPONSE  
BENZENE 1 1.000 PPM  
TOLUENE 2 1.000 PPM  
XYLENE 3 1.000 PPM  
METHYLBENZENE 4 1.000 PPM

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 18:40  
ANALYSIS # 30 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 1 PPM

COMPOUND NAME PEAK # RESPONSE  
BENZENE 1 1.000 PPM  
TOLUENE 2 1.000 PPM  
XYLENE 3 1.000 PPM  
METHYLBENZENE 4 1.000 PPM

# PHOTOVAC

CALIBRATED PEAK 2, BENZENE

SAMPLE LIBRARY 1 JUL 23 1994 18:45  
ANALYSIS # 30 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 1 PPM

1.260 PPM

# PHOTOVAC

1 2

SAMPLE LIBRARY 1 JUL 23 1994 18:57  
ANALYSIS # 31 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 2 AIR

# PHOTOVAC

1 COMPOUND 10 # R.T. LIMIT

# PHOTOVAC

1 2 3 4 5 6 7 8 9

SAMPLE LIBRARY 1 JUL 23 1994 19:08  
ANALYSIS # 32 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 100 PPM

# PHOTOVAC

1 COMPOUND 10 # R.T. LIMIT

BENZENE	1	91.7	100.0	PPM
TOLUENE	2	162.1	100.0	PPM
E-BENZENE	3	318.2	100.0	PPM
MP-XYLENE	4	341.8	100.0	PPM
O-XYLENE	5	402.5	100.0	PPM

# PHOTOVAC

1 2 3

SAMPLE LIBRARY 1 JUL 23 1994 19:13  
ANALYSIS # 33 J BYRD, JR.  
INTERNAL TEMP 35 DULUTH ANG  
GAIN 10 AIR

# PHOTOVAC

1 2 3 4 5 6 7 8 9 10 11

SAMPLE LIBRARY 1 JUL 23 1994 19:23  
ANALYSIS # 34 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 018-0028H0.8-1.3

224.6 PPM  
356.0 PPM  
725.2 PPM

# PHOTOVAC

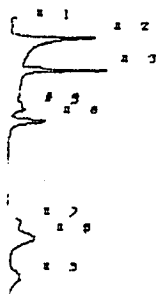
1 2 3 4 5 6 7 8 9 10

SAMPLE LIBRARY 1 JUL 23 1994 19:42  
ANALYSIS # 35 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 018-0028H0.8-1.3

1 2 3 4 5 6 7 8 9 10

1	166.3	PPM
2	193.6	PPM
3	126.8	PPM

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 13:54  
ANALYSIS # 36 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 100 PPS

170.7 PPS

# PHOTOVAC

CALIBRATED PEAK 3, BENZENE

SAMPLE LIBRARY 1 JUL 23 1994 13:56  
ANALYSIS # 36 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 100 PPS

100.0 PPS

107.0 PPS

# PHOTOVAC



SAMPLE LIBRARY 1 JUL 23 1994 20:7  
ANALYSIS # 37 J BYRD, JR.  
INTERNAL TEMP 36 DULUTH ANG  
GAIN 10 AIR

0 2 4 6 8 10  
(x 10 MV)

TIME PRINTED: MAY 16,95 15:38  
SAMPLE TIME: MAY 16,95 15:30

## METHOD

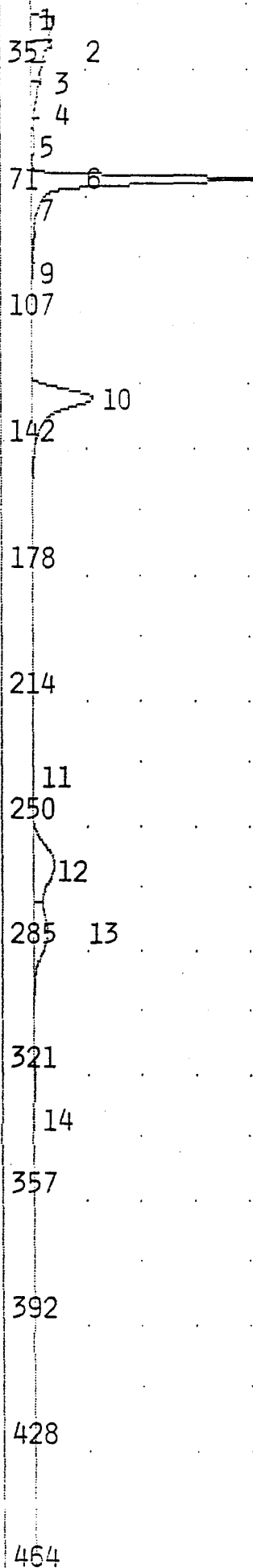
SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 32 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.050 MVS	16.6
2	UNKNOWN	8.773 MVS	18.7
3	UNKNOWN	32.01 MVS	20.3
4	UNKNOWN	22.56 MVS	26.8
5	UNKNOWN	12.13 MVS	32.0
6	UNKNOWN	25.04 MVS	36.3
7	UNKNOWN	9.629 MVS	51.0
8	UNKNOWN	201.0 MVS	64.2
9	UNKNOWN	0.299 MVS	80.0
10	UNKNOWN	130.8 MVS	126.1
11	UNKNOWN	0.086 MVS	230.2
12	UNKNOWN	79.92 MVS	258.4
13	UNKNOWN	58.90 MVS	277.8
14	UNKNOWN	9.116 MVS	324.5

## NOTES

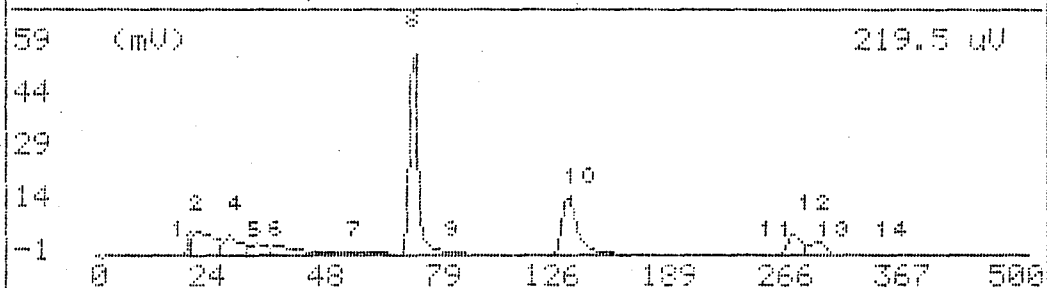
JOE BYRD, JR.  
DULUTH ANGB  
100 PPB BTEX

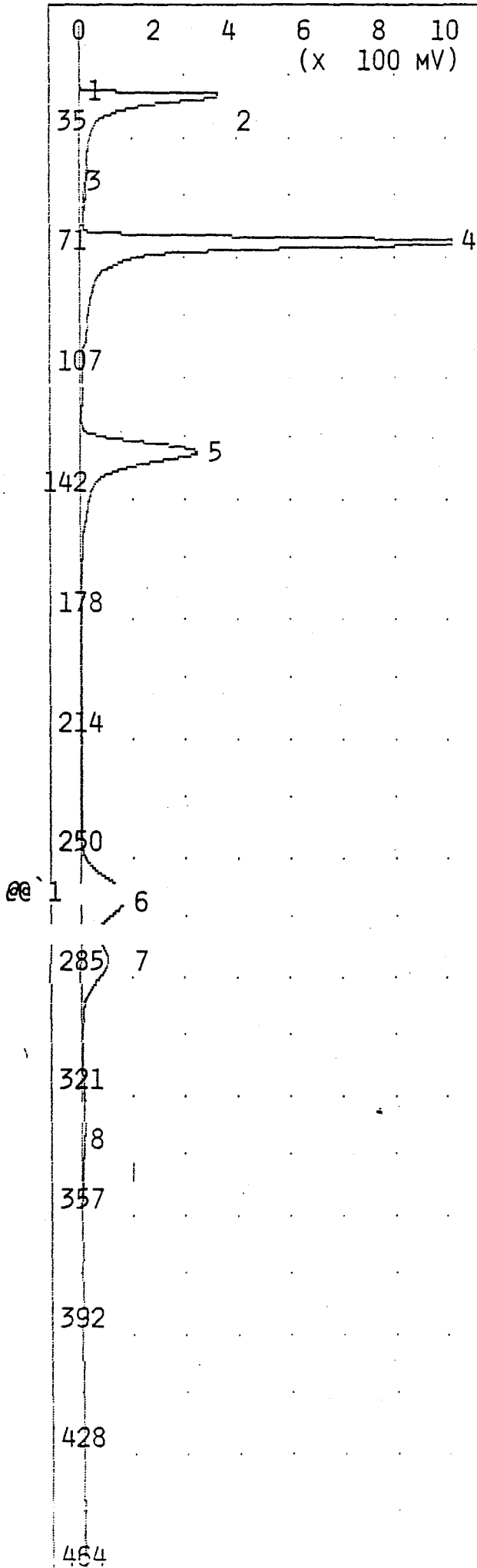


G.C. Ready 109+ GC Function May 16, 95 15:46  
 -- Analysis No 20 -- Run at - May 16, 95 15:50 -  
 Pk No Name Conc/Area Alarm Ret. Time

6	Unknown	25.04 mUS	-No-	36.3 sec
7	Unknown	9.629 mUS	-No-	51.0 sec
8	benzene	100.0 ppb	-No-	64.2 sec
9	Unknown	0.299 mUS	-No-	80.0 sec
10	toluene	100.0 ppb	-No-	126.1 sec
11	Unknown	0.086 mUS	-No-	230.2 sec
12	ethylbenzene	100.0 ppb	-No-	258.4 sec
13	m,p-xylene	200.0 ppb	-No-	277.8 sec
14	o-xylene	100.0 ppb	-No-	324.5 sec

- Detected 14 peaks. Use + + to scroll [ 505 sec]





TIME PRINTED: MAY 16,95 15:56

SAMPLE TIME: MAY 16,95 15:48

## METHOD

SLOPE UP	0.500	MV/SEC
SLOPE DOWN	1.500	MV/SEC
MIN AREA	0.000	MVSEC
MIN HEIGHT	0.000	MV
ANALYSIS DELAY	0.0	SEC
WINDOW PERCENT	10.0	%
DET FLOW	12	ML/MIN
B/F FLOW	12	ML/MIN
AUX FLOW	0	ML/MIN
OVEN TEMP	40	C
AMB TEMP	32	C
MAX GAIN	1000	
ANALYSIS TIME	500.0	SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.060 MVS	16.6
2	UNKNOWN	2.379 VSEC	20.4
3	UNKNOWN	30.14 MVS	43.2
4	BENZENE	2.803 PPM	64.6
5	TOLUENE	2.327 PPM	126.5
6	ETHYLBENZENE	2.108 PPM	259.4
7	M,P-XYLENE	3.727 PPM	278.4
8	O-XYLENE	3.723 PPM	325.8

## NOTES

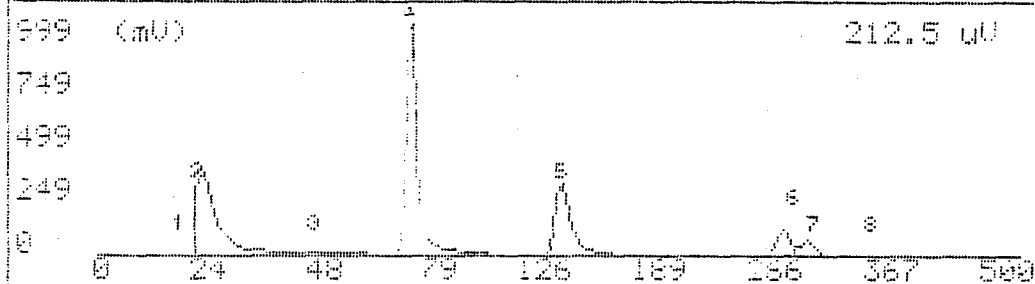
JOE BYRD, JR.  
DULUTH ANGB  
1 PPM BTEX

G.C. Ready 186+ GC Function Ma, 16.95 16:01  
 -- Analysis No 21 -- Run at - May 11, 95 15:48 -  
 Pk No Name Conc Area Alarm Ret. Time

1	Unknown	0.250	0US	-	16.6	sec
2	Unknown	2.379	0Sec	-	23.4	sec
3	Unknown	30.14	mUS	-	43.2	sec
4	benzene	1.220	ppm	-	64.5	sec
5	toluene	1.220	ppm	-	126.5	sec
6	ethylbenzene	1.220	ppm	-	250.4	sec
7	m,p-xylene	2.000	ppm	-	325.4	sec
8	o-xylene	1.006	ppm	-	325.8	sec

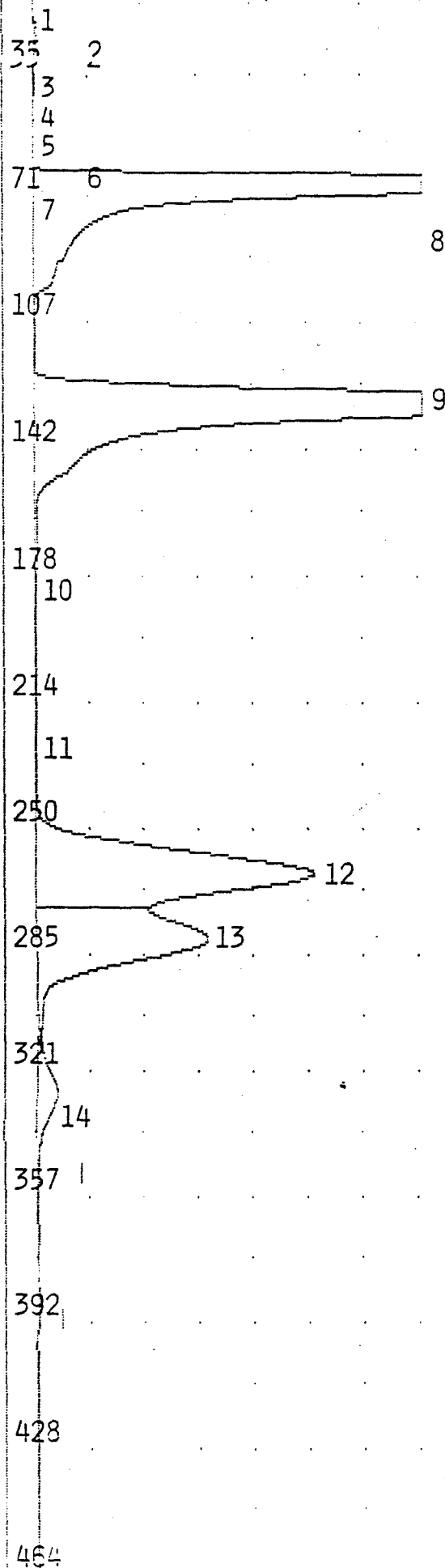
- Detected 8 peaks.

[ 385 sec]





0 2 4 6 8 10  
(X 100 MV)



TIME PRINTED: MAY 16,95 16:11

SAMPLE TIME: MAY 16,95 16:02

## METHOD

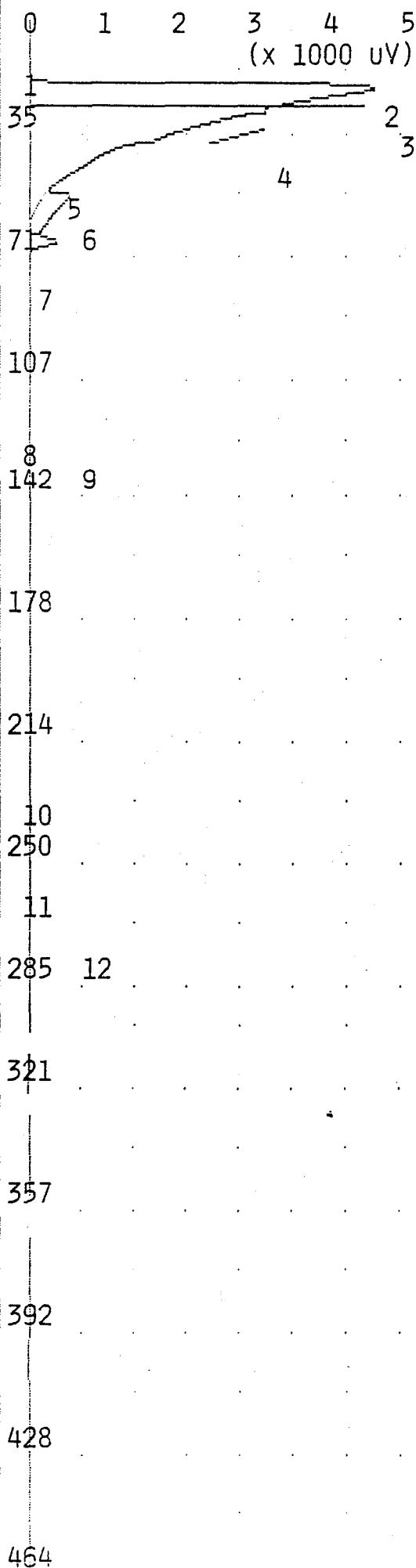
SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 32 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.060 MVS	16.7
2	UNKNOWN	7.290 MVS	18.9
3	UNKNOWN	53.09 MVS	20.6
4	UNKNOWN	36.55 MVS	27.0
5	UNKNOWN	20.70 MVS	31.9
6	UNKNOWN	38.02 MVS	36.4
7	UNKNOWN	11.98 MVS	50.9
8	BENZENE	3.009 PPM	65.2
9	TOLUENE	6.233 PPM	127.7
10	UNKNOWN	18.33 MVS	179.2
11	UNKNOWN	2.078 MVS	223.2
12	ETHYLBENZENE	5.917 PPM	260.2
13	M,P-XYLENE	11.75 PPM	278.4
14	O-XYLENE	3.681 PPM	325.3

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
10 PPM BTEX



TIME PRINTED: MAY 16, 95 16:26

SAMPLE TIME: MAY 16, 95 16:17

## METHOD

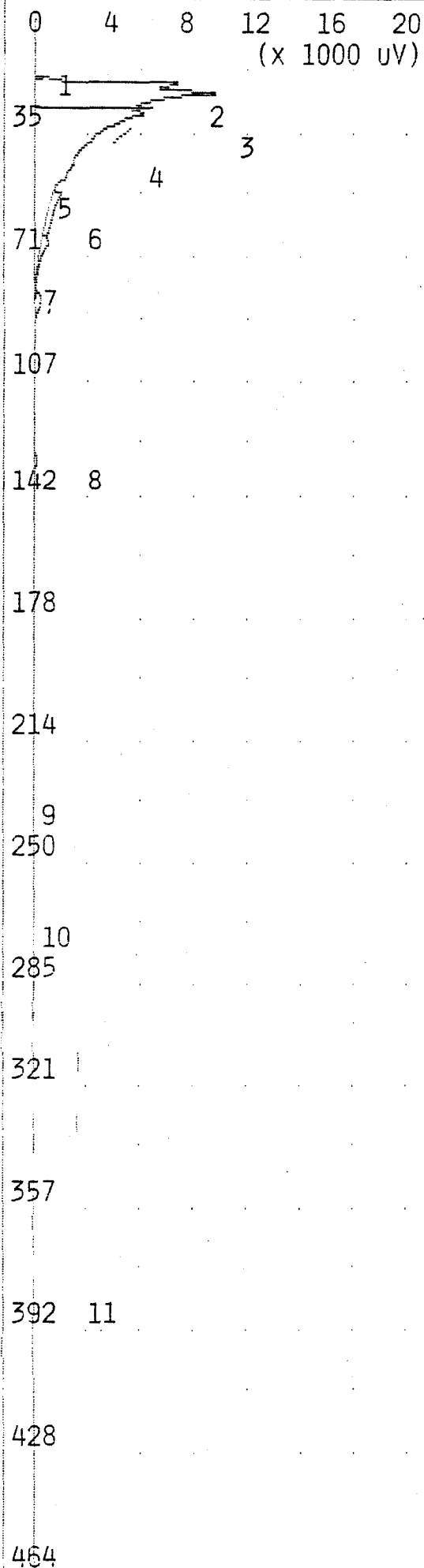
SLOPE UP 0.500 MV/SEC  
 SLOPE DOWN 1.500 MV/SEC  
 MIN AREA 0.000 MVSEC  
 MIN HEIGHT 0.000 MV  
 ANALYSIS DELAY 0.0 SEC  
 WINDOW PERCENT 10.0 %  
 DET FLOW 12 ML/MIN  
 B/F FLOW 12 ML/MIN  
 AUX FLOW 0 ML/MIN  
 OVEN TEMP 40 C  
 AMB TEMP 32 C  
 MAX GAIN 1000  
 ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.040 MVS	16.5
2	UNKNOWN	6.238 MVS	19.1
3	UNKNOWN	85.06 MVS	20.5
4	UNKNOWN	0.599 MVS	26.9
5	UNKNOWN	3.556 MVS	51.5
6	BENZENE	1.098 PPB	64.5
7	UNKNOWN	1.293 MVS	80.6
8	TOLUENE	0.887 PPB	126.9
9	UNKNOWN	0.162 MVS	129.3
10	UNKNOWN	0.658 MVS	229.8
11	ETHYLBENZENE	6.002 PPB	261.0
12	M,P-XYLENE	8.717 PPB	278.4

## NOTES

JOE BYRD, JR.  
 DULUTH ANGB  
 AIR BLANK



TIME PRINTED: MAY 16,95 17:03

SAMPLE TIME: MAY 16,95 16:55

## METHOD

SLOPE UP	0.500	MV/SEC
SLOPE DOWN	1.500	MV/SEC
MIN AREA	0.000	MVSEC
MIN HEIGHT	0.000	MV
ANALYSIS DELAY	0.0	SEC
WINDOW PERCENT	10.0	%
DET FLOW	12	ML/MIN
B/F FLOW	12	ML/MIN
AUX FLOW	0	ML/MIN
OVEN TEMP	40	C
AMB TEMP	31	C
MAX GAIN	1000	
ANALYSIS TIME	500.0	SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	1.085 MVS	17.5
2	UNKNOWN	12.87 MVS	19.0
3	UNKNOWN	137.5 MVS	21.7
4	UNKNOWN	2.157 MVS	27.5
5	UNKNOWN	3.787 MVS	51.1
6	BENZENE	0.759 PPB	64.9
7	UNKNOWN	1.469 MVS	81.4
8	TOLUENE	2.673 PPB	128.0
9	UNKNOWN	1.304 MVS	233.2
10	ETHYLBENZENE	0.135 PPB	264.2
11	UNKNOWN	0.546 MVS	385.6

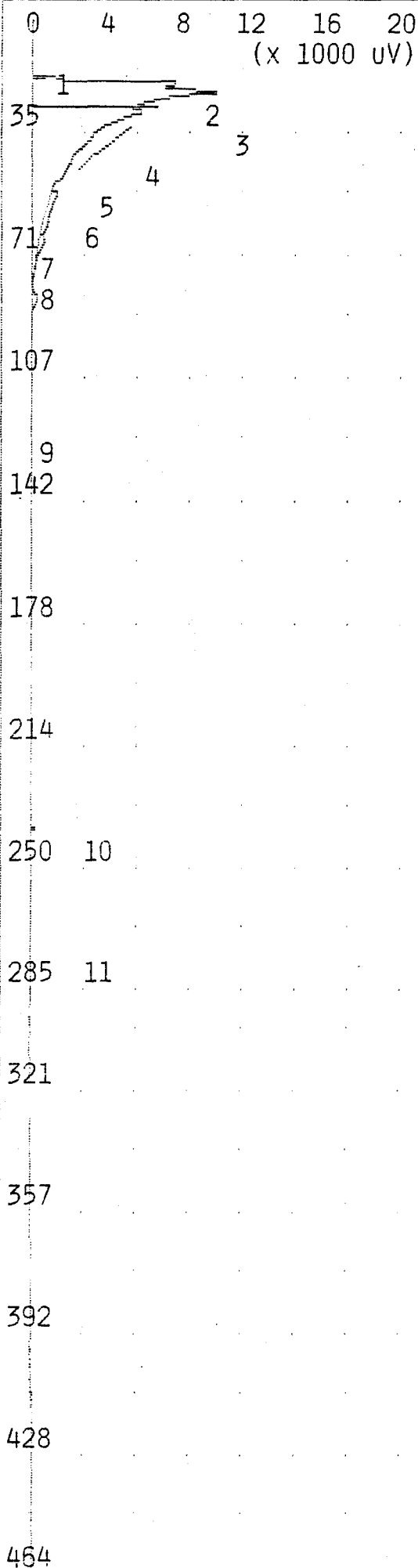
## NOTES

JOE BYRD, JR.

DULUTH ANGB

021-026BH

8.0-10.0 10G



TIME PRINTED: MAY 16,95 17:15

SAMPLE TIME: MAY 16,95 17:07

## METHOD

SLOPE UP	0.500	MV/SEC
SLOPE DOWN	1.500	MV/SEC
MIN AREA	0.000	MVSEC
MIN HEIGHT	0.000	MV
ANALYSIS DELAY	0.0	SEC
WINDOW PERCENT	10.0	%
DET FLOW	12	ML/MIN
B/F FLOW	12	ML/MIN
AUX FLOW	0	ML/MIN
OVEN TEMP	40	C
AMB TEMP	31	C
MAX GAIN	1000	
ANALYSIS TIME	500.0	SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	1.713 MVS	17.5
2	UNKNOWN	13.31 MVS	19.0
3	UNKNOWN	141.2 MVS	21.7
4	UNKNOWN	2.372 MVS	27.4
5	UNKNOWN	0.272 MVS	34.9
6	UNKNOWN	3.521 MVS	50.9
7	BENZENE	0.566 PPB	65.3
8	UNKNOWN	1.230 MVS	81.0
9	TOLUENE	1.706 PPB	127.8
10	ETHYLBENZENE	3.612 PPB	236.2
11	M,P-XYLENE	5.176 PPB	279.4

## NOTES

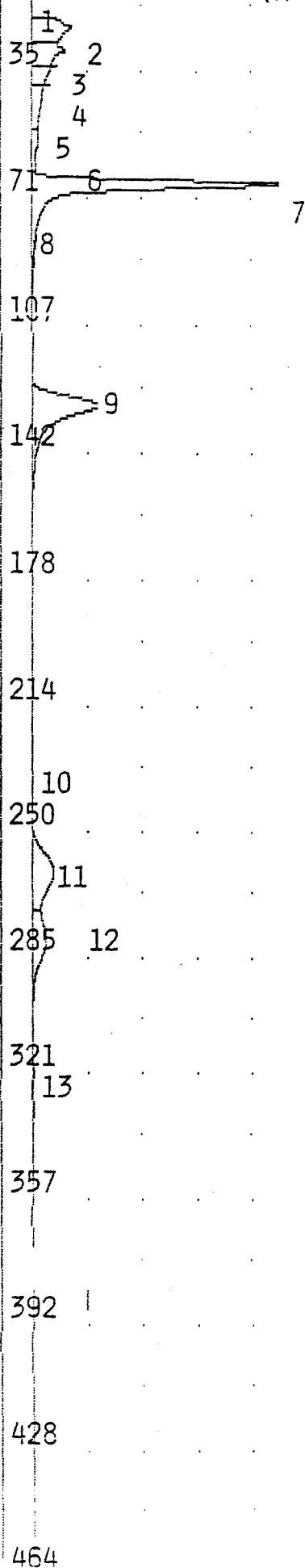
JOE BYRD, JR.

DULUTH ANGB

021-026BH

4.0- 6.0 10G

0 2 4 6 8 10  
(x 10 MV)



TIME PRINTED: MAY 16, 95 17:39

SAMPLE TIME: MAY 16, 95 17:31

## METHOD

SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 31 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

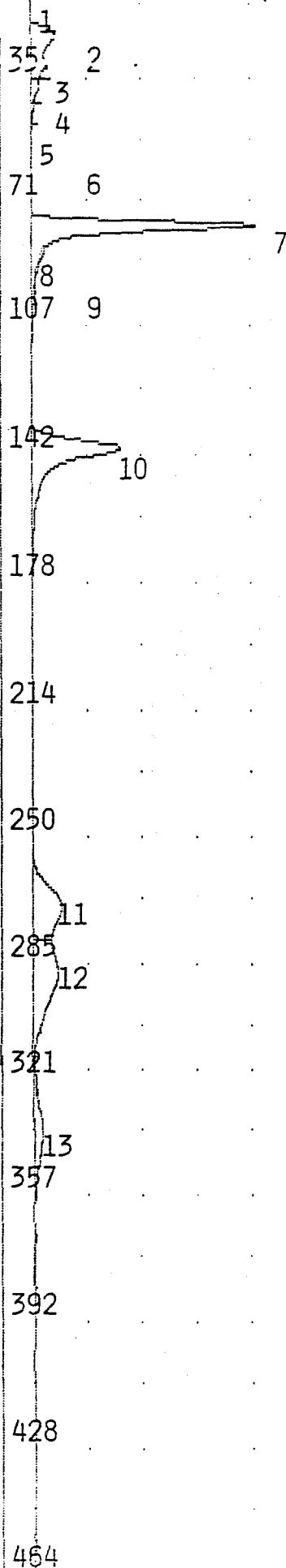
## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.059 MVS	16.9
2	UNKNOWN	10.52 MVS	19.2
3	UNKNOWN	52.81 MVS	21.0
4	UNKNOWN	37.52 MVS	27.6
5	UNKNOWN	57.25 MVS	32.6
6	UNKNOWN	19.65 MVS	51.1
7	BENZENE	106.2 PPB	65.2
8	UNKNOWN	0.651 MVS	80.6
9	TOLUENE	103.2 PPB	127.0
10	UNKNOWN	1.272 MVS	231.2
11	ETHYLBENZENE	98.22 PPB	259.2
12	M,P-XYLENE	188.0 PPB	278.1
13	O-XYLENE	68.30 PPB	324.2

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
100 PPB BTEX

0 2 4 6 8 10  
(X 10 MV)



TIME PRINTED: MAY 17, 95 08:06

SAMPLE TIME: MAY 17, 95 07:57

## METHOD

SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 29 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

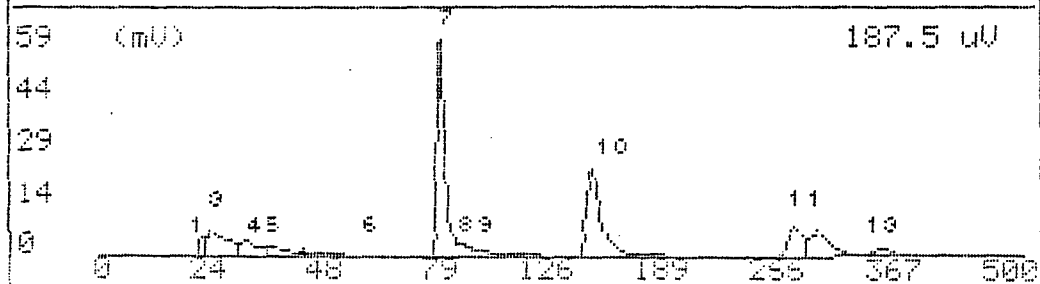
## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.097 MVS	18.6
2	UNKNOWN	8.173 MVS	20.9
3	UNKNOWN	35.18 MVS	22.6
4	UNKNOWN	19.48 MVS	29.8
5	UNKNOWN	18.64 MVS	35.6
6	UNKNOWN	0.398 MVS	54.6
7	UNKNOWN	277.1 MVS	76.5
8	UNKNOWN	2.155 MVS	84.0
9	UNKNOWN	0.483 MVS	93.4
10	UNKNOWN	182.4 MVS	138.5
11	UNKNOWN	107.3 MVS	267.2
12	UNKNOWN	130.4 MVS	285.6
13	UNKNOWN	48.03 MVS	337.3

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
100 PPB BTEX

G.C. Ready		10S+ GC Function		May 17, 95 08:13	
-- Analysis No 3		-- Run at -		May 17, 95 07:57 -	
Pk No	Name	Conc/Area	Alarm	Ret. Time	
5	Unknown	18.64 mUS	-No-	35.6 sec	
6	Unknown	0.398 mUS	-No-	54.6 sec	
7	benzene	100.0 ppb	-No-	76.5 sec	
8	Unknown	2.155 mUS	-No-	84.0 sec	
9	Unknown	0.483 mUS	-No-	93.4 sec	
10	toluene	100.0 ppb	-No-	138.5 sec	
11	ethylbenzene	100.0 ppb	-No-	267.2 sec	
12	m,p-xylene	200.0 ppb	-No-	285.6 sec	
13	o-xylene	100.0 ppb	-No-	337.3 sec	
- Detected 13 peaks. Use + + to scroll				[ 505 sec]	



0 2 4 6 8 10  
(x 100 MV)

TIME PRINTED: MAY 17,95 08:23

SAMPLE TIME: MAY 17,95 08:15

## METHOD

SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 30 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.056 MVS	16.0
2	UNKNOWN	0.084 MVS	17.8
3	UNKNOWN	0.135 MVS	18.8
4	UNKNOWN	1.488 VSEC	23.0
5	UNKNOWN	0.596 MVS	47.8
6	BENZENE	2.734 PPM	77.2
7	TOLUENE	1.938 PPM	138.9
8	ETHYLBENZENE	2.221 PPM	268.2
9	M,P-XYLENE	3.749 PPM	286.6
10	O-XYLENE	2.084 PPM	337.3

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
1 PPM BTEX

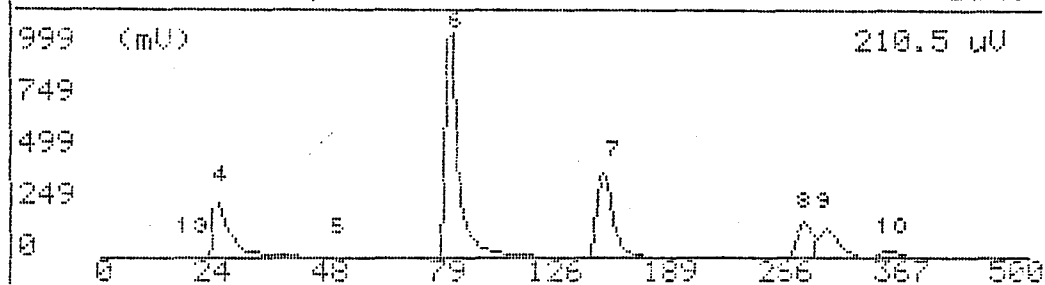
392

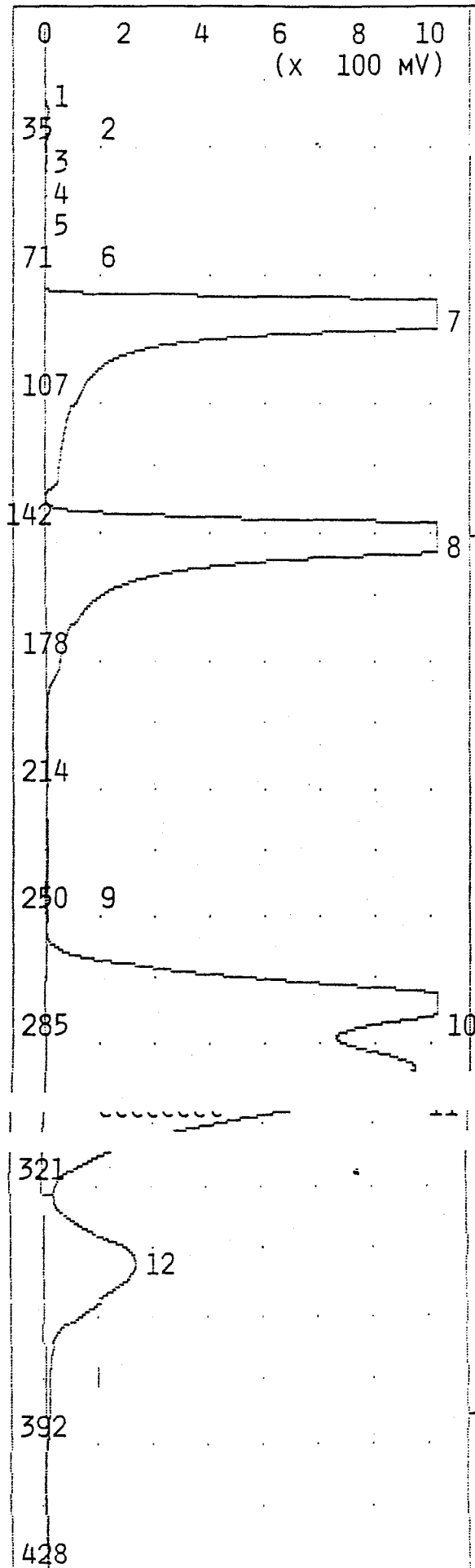
428

464



G.C. Ready		105+ GC Function		May 17, 95 08:28	
-- Analysis No 4		-- Run at --		May 17, 95 08:15	
Pk No	Name	Conc/Area	Alarm	Ret. Time	
2	Unknown	0.004 mUS	-No-	17.0 sec	
3	Unknown	0.135 mUS	-No-	18.0 sec	
4	Unknown	1.400 mUS	-No-	20.0 sec	
5	Unknown	0.596 mUS	-No-	47.0 sec	
6	benzene	1.000 ppm	-No-	77.0 sec	
7	toluene	1.000 ppm	-No-	106.0 sec	
8	ethylbenzene	1.000 ppm	-No-	200.0 sec	
9	m,p-xylene	2.000 ppm	-No-	206.0 sec	
10	o-xylene	1.004 ppm	-No-	337.0 sec	
- Detected 10 peaks. Use + + to scroll [ 505 sec]					





TIME PRINTED: MAY 17,95 08:38

SAMPLE TIME: MAY 17,95 08:30

## METHOD

SLOPE UP	0.500	MV/SEC
SLOPE DOWN	1.500	MV/SEC
MIN AREA	0.000	MVSEC
MIN HEIGHT	0.000	MV
ANALYSIS DELAY	0.0	SEC
WINDOW PERCENT	10.0	%
DET FLOW	12	ML/MIN
B/F FLOW	12	ML/MIN
AUX FLOW	0	ML/MIN
OVEN TEMP	40	C
AMB TEMP	30	C
MAX GAIN	1000	
ANALYSIS TIME	500.0	SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.052 MVS	18.8
2	UNKNOWN	5.132 MVS	21.4
3	UNKNOWN	54.13 MVS	23.1
4	UNKNOWN	34.81 MVS	30.4
5	UNKNOWN	34.36 MVS	36.0
6	UNKNOWN	0.103 MVS	55.3
7	BENZENE	3.956 PPM	79.8
8	TOLUENE	7.032 PPM	141.3
9	UNKNOWN	4.330 MVS	236.6
10	ETHYLBENZENE	7.386 PPM	272.2
11	M,P-XYLENE	14.38 PPM	289.8
12	O-XYLENE	5.601 PPM	341.0

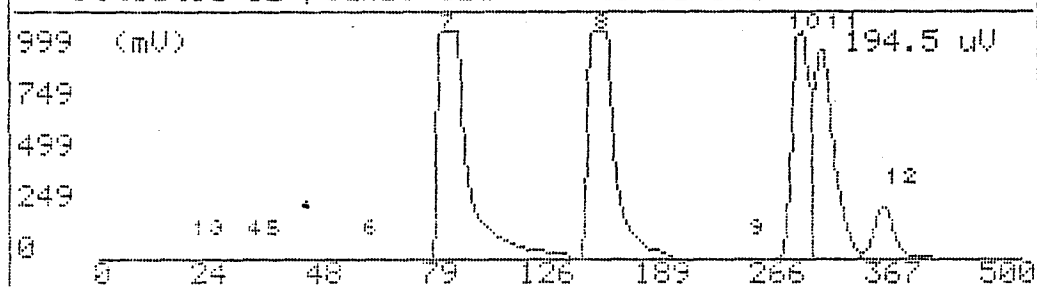
## NOTES

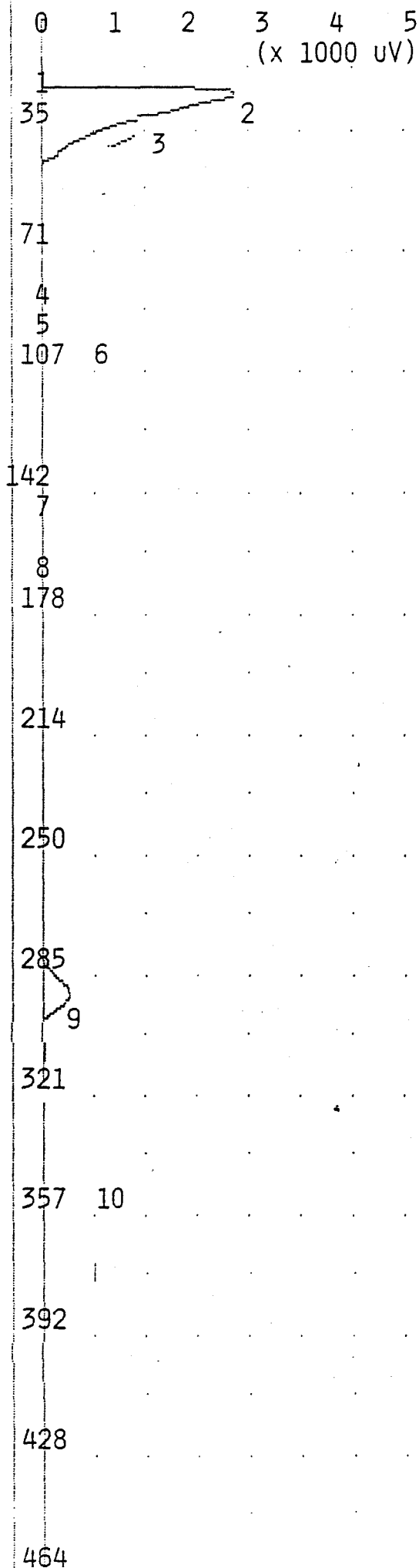
JOE BYRD, JR.  
DULUTH ANGB  
10 PPM BTEX

S.C. Ready 103+ GC Function May 17, 95 08:44  
 -- Analysis No 5 -- Run at - May 17, 95 08:30 -  

Pk No	Name	Conc/Area	Alarm	Ret. Time
4	Unknown	34.81 mUS	-No-	30.4 sec
5	Unknown	34.36 mUS	-No-	36.0 sec
6	Unknown	0.103 mUS	-No-	55.3 sec
7	benzene	10.00 ppm	-No-	79.0 sec
8	toluene	10.00 ppm	-No-	141.3 sec
9	Unknown	4.330 mUS	-No-	236.0 sec
10	ethylbenzene	10.00 ppm	-No-	272.2 sec
11	m,p-xylene	20.00 ppm	-No-	289.0 sec
12	o-xylene	10.02 ppm	-No-	341.0 sec

 - Detected 12 peaks. Use + + to scroll [ 505 sec]





TIME PRINTED: MAY 17,95 08:54

SAMPLE TIME: MAY 17,95 08:45

## METHOD

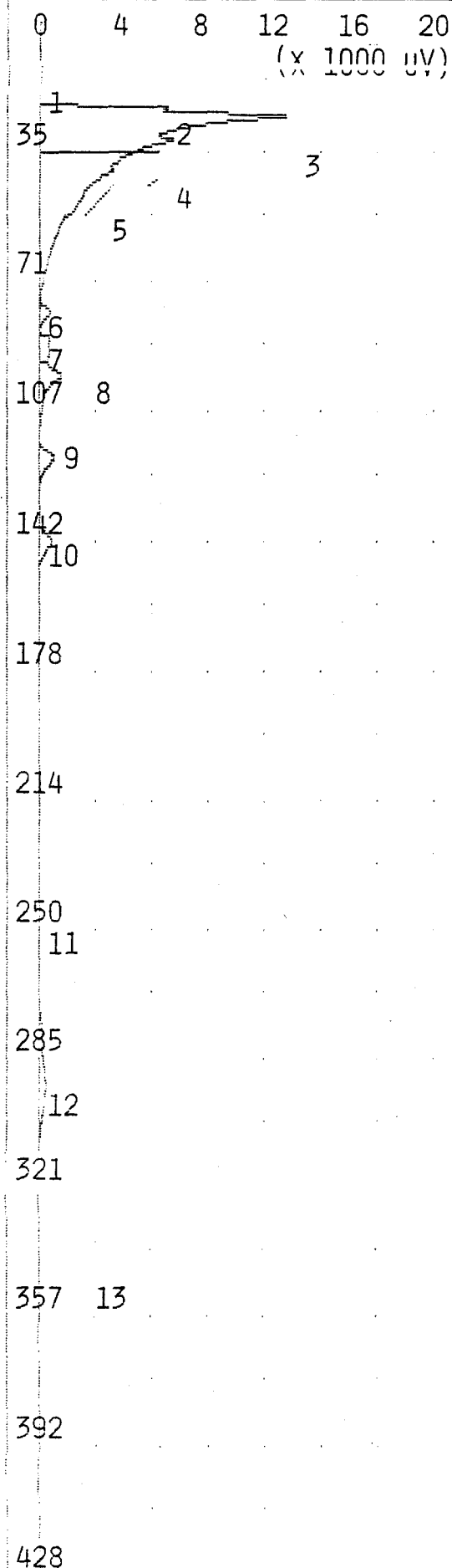
SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 30 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.067 MVS	18.5
2	UNKNOWN	52.43 MVS	22.8
3	UNKNOWN	0.196 MVS	29.5
4	BENZENE	0.795 PPB	76.9
5	UNKNOWN	5.512 MVS	84.9
6	UNKNOWN	27.63 MVS	94.4
7	TOLUENE	11.98 PPB	140.6
8	UNKNOWN	5.801 MVS	161.0
9	M,P-XYLENE	83.47 PPB	289.8
10	O-XYLENE	19.58 PPB	347.0

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
AIR BLANK



TIME PRINTED: MAY 17,95 09:06

SAMPLE TIME: MAY 17,95 08:58

## METHOD

SLOPE UP	0.500	MV/SEC
SLOPE DOWN	1.500	MV/SEC
MIN AREA	0.000	MVSEC
MIN HEIGHT	0.000	MV
ANALYSIS DELAY	0.0	SEC
WINDOW PERCENT	10.0	%
DET FLOW	12	ML/MIN
B/F FLOW	12	ML/MIN
AUX FLOW	0	ML/MIN
OVEN TEMP	40	C
AMB TEMP	30	C
MAX GAIN	1000	
ANALYSIS TIME	500.0	SEC

## PEAK REPORT

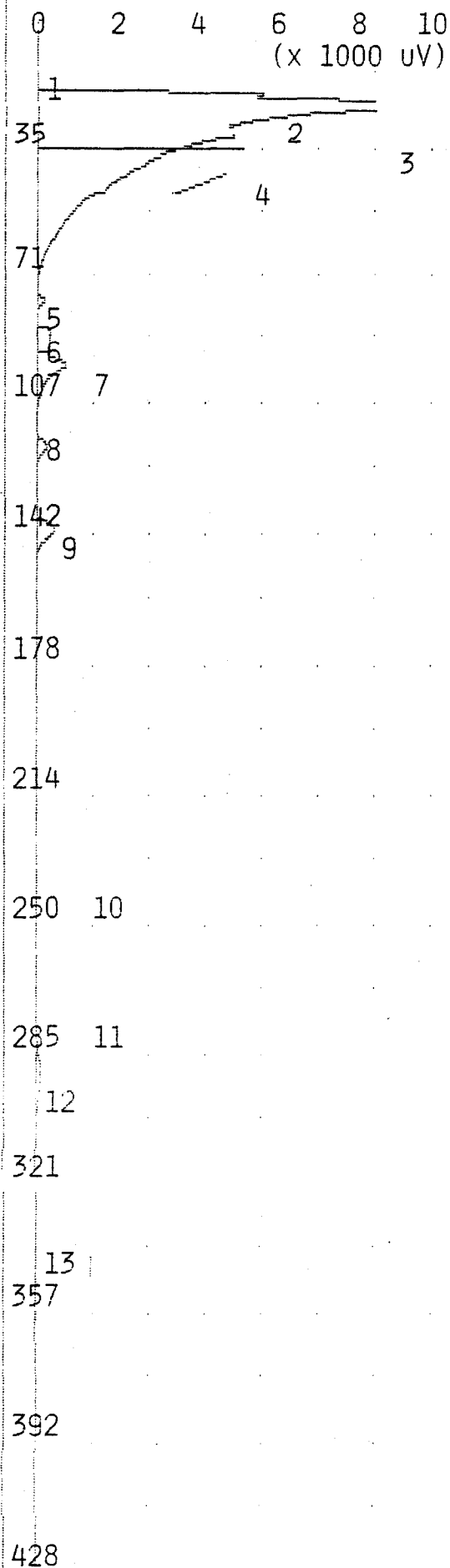
PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.304 MVS	19.1
2	UNKNOWN	10.12 MVS	21.1
3	UNKNOWN	187.3 MVS	23.2
4	UNKNOWN	2.390 MVS	30.2
5	UNKNOWN	0.537 MVS	38.0
6	BENZENE	0.722 PPB	77.2
7	UNKNOWN	4.347 MVS	85.4
8	UNKNOWN	8.402 MVS	95.0
9	UNKNOWN	5.935 MVS	117.4
10	TOLUENE	3.303 PPB	140.4
11	ETHYLBENZENE	0.340 PPB	249.6
12	M,P-XYLENE	31.19 PPB	290.6
13	O-XYLENE	11.22 PPB	346.3

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
021-027BH  
4.0- 6.0 10G

ANALYTIC #8

## 10S+ GC FUNCTION ANALYSIS REPORT



TIME PRINTED: MAY 17,95 09:18

SAMPLE TIME: MAY 17,95 09:10

## METHOD

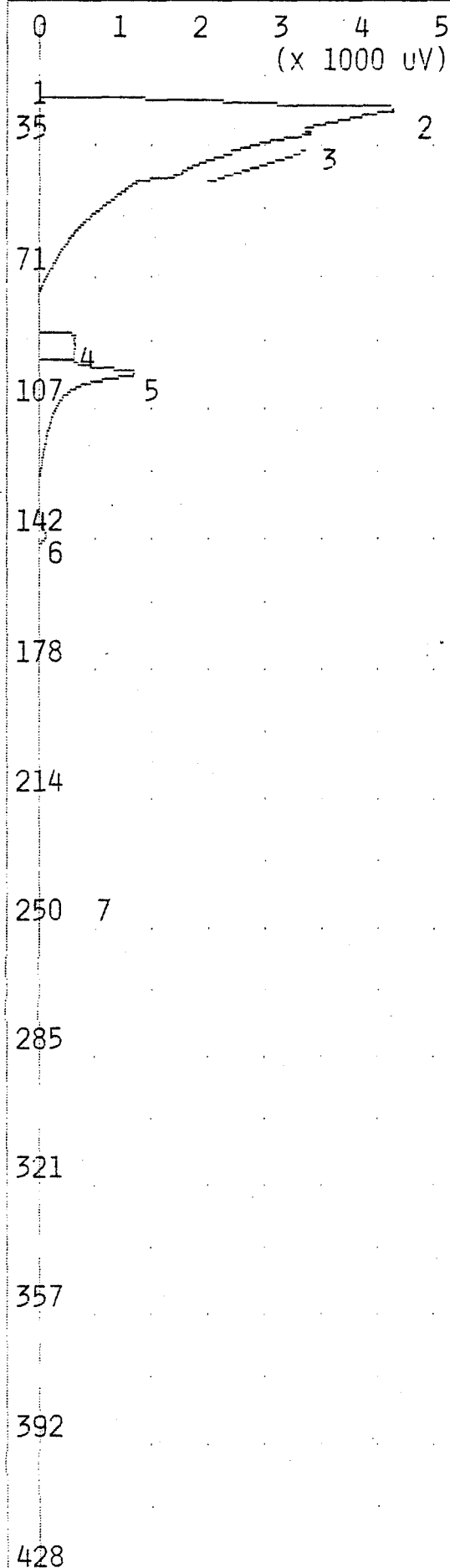
SLOPE UP	0.500	MV/SEC
SLOPE DOWN	1.500	MV/SEC
MIN AREA	0.000	MVSEC
MIN HEIGHT	0.000	MV
ANALYSIS DELAY	0.0	SEC
WINDOW PERCENT	10.0	%
DET FLOW	12	ML/MIN
B/F FLOW	12	ML/MIN
AUX FLOW	0	ML/MIN
OVEN TEMP	40	C
AMB TEMP	30	C
MAX GAIN	1000	
ANALYSIS TIME	500.0	SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.256 MVS	19.0
2	UNKNOWN	9.025 MVS	20.9
3	UNKNOWN	133.0 MVS	23.3
4	UNKNOWN	0.828 MVS	29.8
5	BENZENE	0.464 PPB	76.0
6	UNKNOWN	4.057 MVS	85.8
7	UNKNOWN	8.585 MVS	94.0
8	UNKNOWN	3.528 MVS	116.8
9	TOLUENE	2.805 PPB	139.0
10	UNKNOWN	0.189 MVS	241.8
11	ETHYLBENZENE	2.698 PPB	272.2
12	M,P-XYLENE	8.095 PPB	289.6
13	O-XYLENE	4.406 PPB	340.0

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
021-027BH  
8.0-10.0 10G



TIME PRINTED: MAY 17,95 09:30

SAMPLE TIME: MAY 17,95 09:21

## METHOD

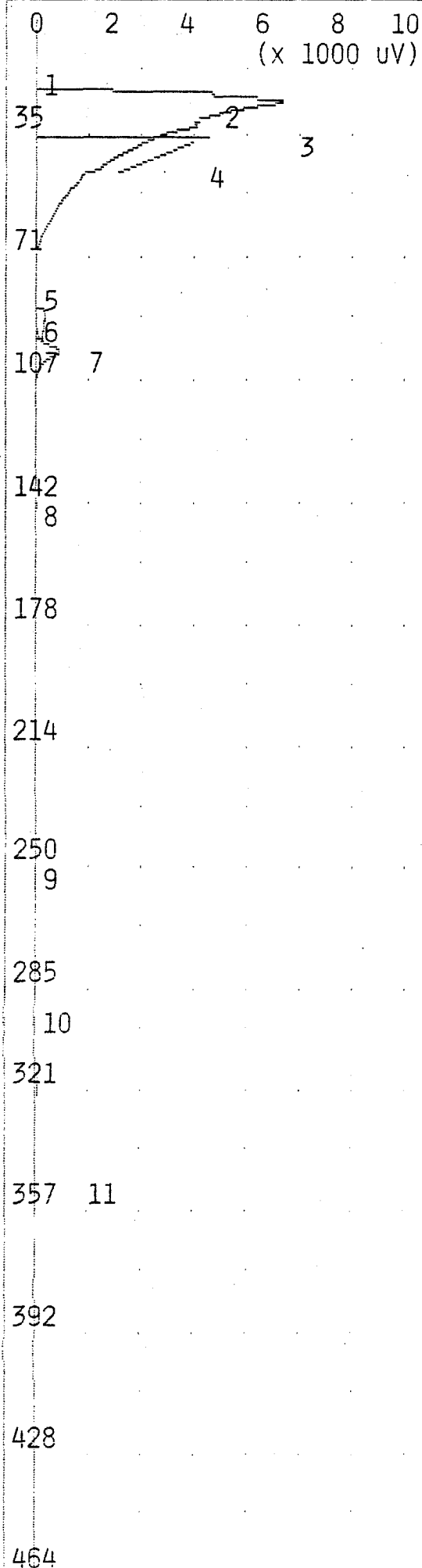
SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 30 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.042 MVS	19.0
2	UNKNOWN	100.6 MVS	23.6
3	UNKNOWN	0.442 MVS	30.1
4	BENZENE	2.115 PPB	85.2
5	UNKNOWN	17.87 MVS	94.9
6	TOLUENE	1.215 PPB	139.4
7	UNKNOWN	0.753 MVS	242.4

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
AIR BLANK



TIME PRINTED: MAY 17,95 09:42

SAMPLE TIME: MAY 17,95 09:34

## METHOD

SLOPE UP 0.500 MV/SEC  
 SLOPE DOWN 1.500 MV/SEC  
 MIN AREA 0.000 MVSEC  
 MIN HEIGHT 0.000 MV  
 ANALYSIS DELAY 0.0 SEC  
 WINDOW PERCENT 10.0 %  
 DET FLOW 12 ML/MIN  
 B/F FLOW 12 ML/MIN  
 AUX FLOW 0 ML/MIN  
 OVEN TEMP 40 C  
 AMB TEMP 30 C  
 MAX GAIN 1000  
 ANALYSIS TIME 500.0 SEC

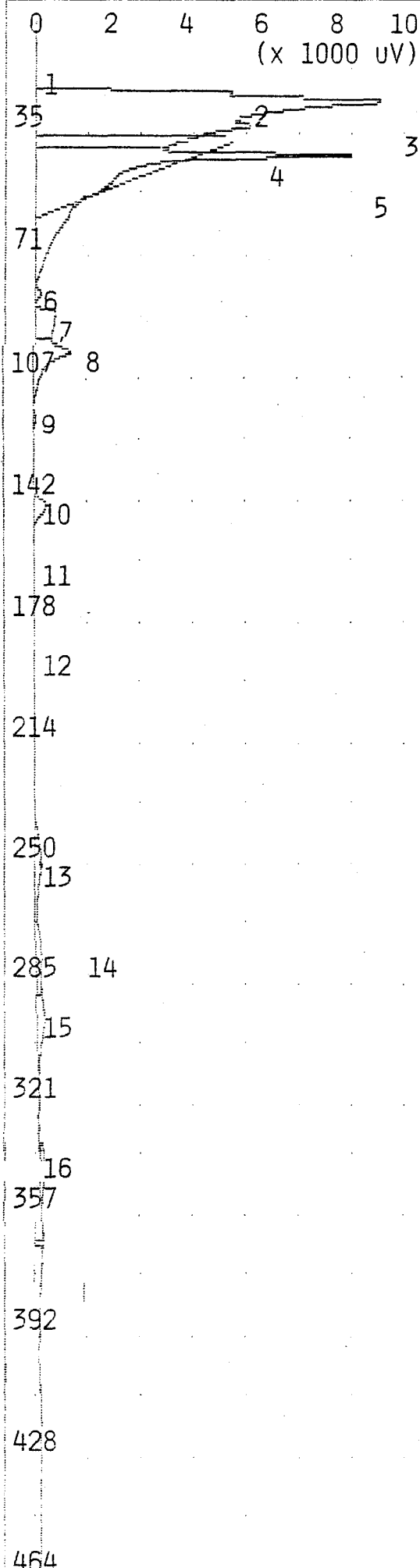
## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.064 MVS	18.9
2	UNKNOWN	7.599 MVS	22.1
3	UNKNOWN	121.6 MVS	24.2
4	UNKNOWN	0.433 MVS	30.6
5	BENZENE	0.029 PPB	80.0
6	UNKNOWN	2.715 MVS	84.9
7	UNKNOWN	13.01 MVS	96.4
8	TOLUENE	1.969 PPB	141.0
9	ETHYLBENZENE	2.156 PPB	248.2
10	M,P-XYLENE	2.776 PPB	292.0
11	O-XYLENE	1.850 PPB	343.6

## NOTES

JOE BYRD, JR.  
 DULUTH ANGB  
 021-028BH  
 0.5- 2.5 10G





TIME PRINTED: MAY 17,95 09:54

SAMPLE TIME: MAY 17,95 09:46

## METHOD

SLOPE UP 0.500 MV/SEC  
 SLOPE DOWN 1.500 MV/SEC  
 MIN AREA 0.000 MVSEC  
 MIN HEIGHT 0.000 MV  
 ANALYSIS DELAY 0.0 SEC  
 WINDOW PERCENT 10.0 %  
 DET FLOW 12 ML/MIN  
 B/F FLOW 12 ML/MIN  
 AUX FLOW 0 ML/MIN  
 OVEN TEMP 40 C  
 AMB TEMP 30 C  
 MAX GAIN 1000  
 ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.649 MVS	19.7
2	UNKNOWN	8.885 MVS	22.2
3	UNKNOWN	92.85 MVS	24.4
4	UNKNOWN	1.992 MVS	31.2
5	UNKNOWN	72.39 MVS	39.5
6	BENZENE	0.157 PPB	80.2
7	UNKNOWN	7.027 MVS	84.8
8	UNKNOWN	11.89 MVS	96.9
9	UNKNOWN	0.028 MVS	115.0
10	TOLUENE	1.869 PPB	141.6
11	UNKNOWN	0.994 MVS	161.8
12	UNKNOWN	1.665 MVS	184.4
13	UNKNOWN	4.839 MVS	247.7
14	ETHYLBENZENE	3.057 PPB	275.2
15	M,P-XYLENE	5.382 PPB	294.6
16	O-XYLENE	5.461 PPB	339.3

## NOTES

JOE BYRD, JR.  
 DULUTH ANGB  
 021-028BH  
 8.0-10.0 20G

0 2 4 6 8 10  
(X 10 MV)

TIME PRINTED: MAY 17,95 10:06

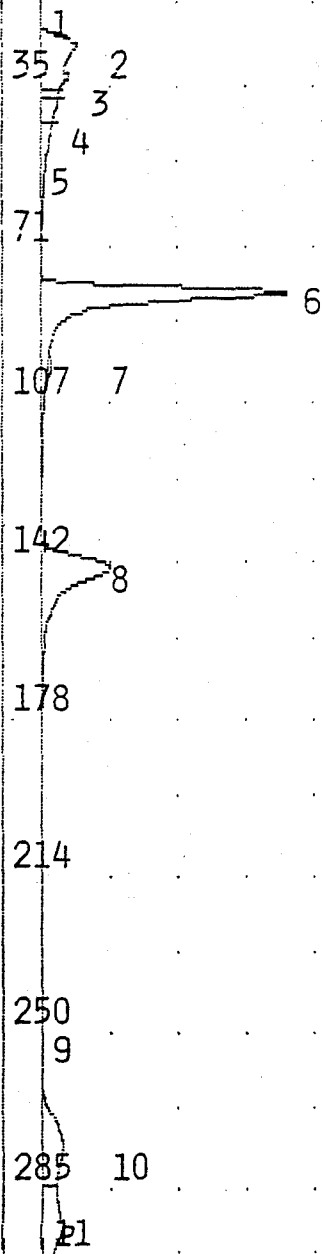
SAMPLE TIME: MAY 17,95 09:58

## METHOD

SLOPE UP. 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 29 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

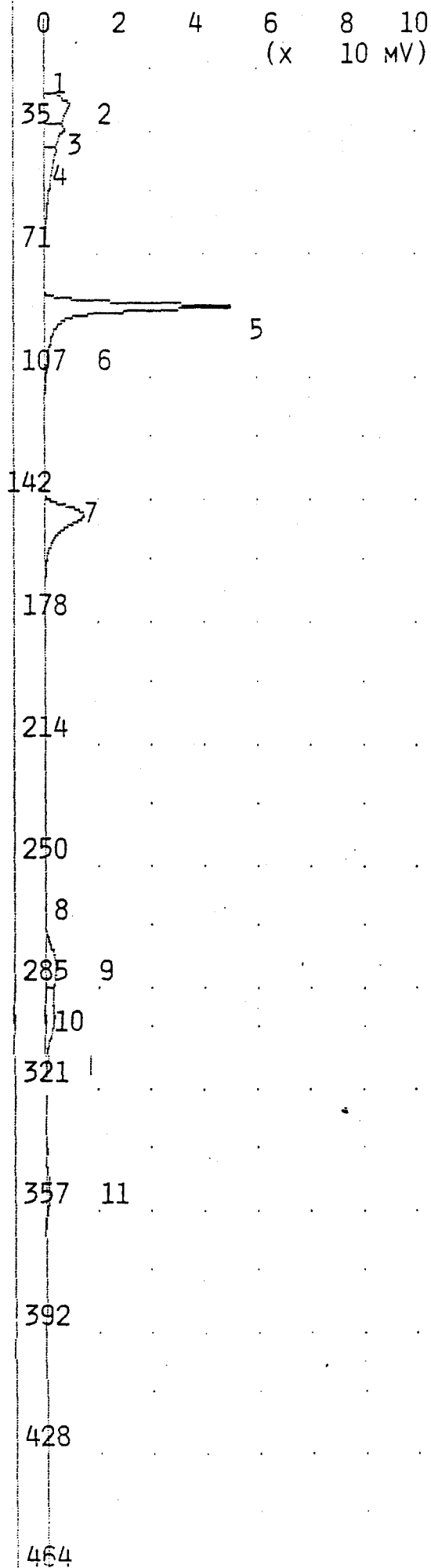
## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.046 MVS	19.4
2	UNKNOWN	7.622 MVS	22.1
3	UNKNOWN	46.85 MVS	24.2
4	UNKNOWN	31.99 MVS	31.2
5	UNKNOWN	56.32 MVS	36.9
6	BENZENE	96.58 PPB	79.8
7	UNKNOWN	2.715 MVS	96.5
8	TOLUENE	70.20 PPB	141.7
9	UNKNOWN	1.079 MVS	246.1
10	ETHYLBENZENE	61.78 PPB	273.0
11	M,P-XYLENE	118.6 PPB	290.9
12	O-XYLENE	51.25 PPB	344.3



NOTES

JOE BYRD, JR.  
DULUTH ANGB  
100 PPB BTEX



TIME PRINTED: MAY 17,95 14:49

SAMPLE TIME: MAY 17,95 14:41

## METHOD

SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 31 C  
MAX GAIN 1000

ANALYSIS TIME 500.0 SEC

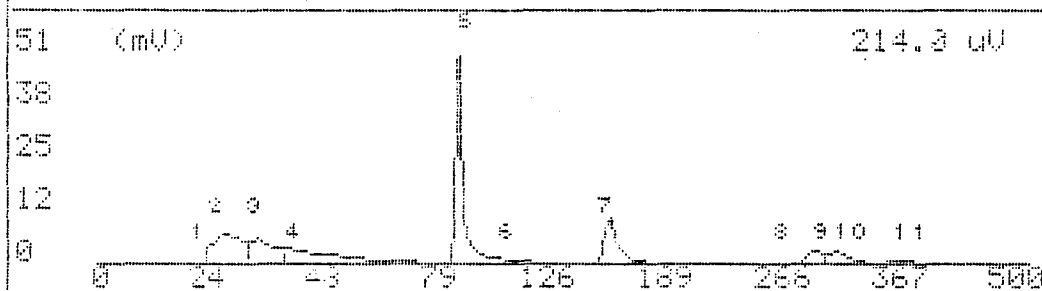
## PEAK REPORT

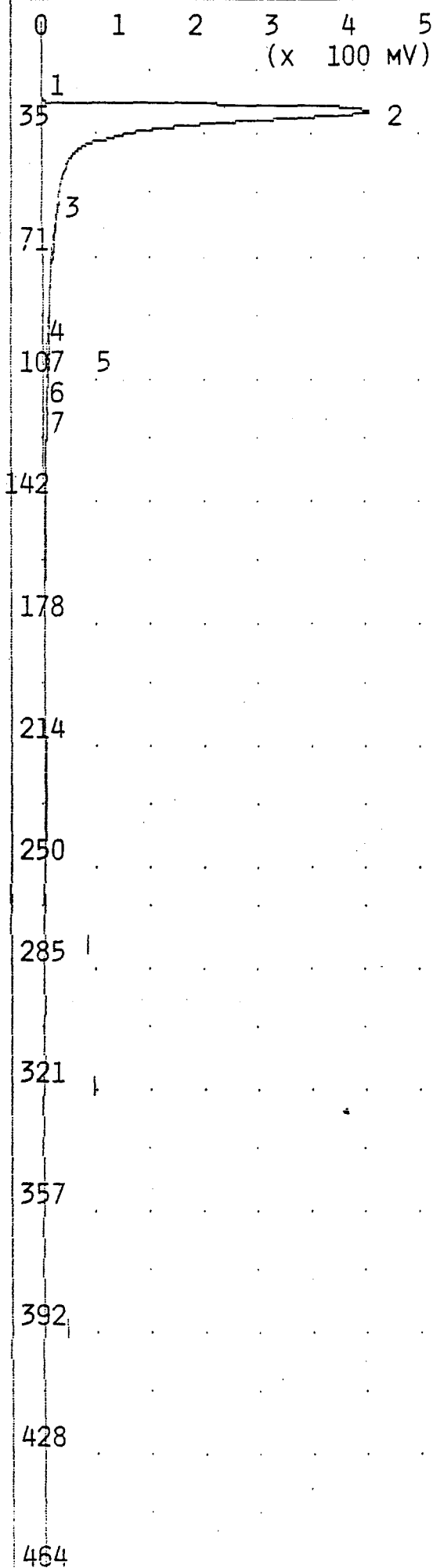
PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.042 MVS	20.6
2	UNKNOWN	55.58 MVS	25.6
3	UNKNOWN	31.74 MVS	32.8
4	UNKNOWN	56.63 MVS	39.0
5	BENZENE	95.93 PPB	84.2
6	UNKNOWN	1.090 MVS	98.9
7	TOLUENE	91.85 PPB	145.2
8	UNKNOWN	0.577 MVS	253.0
9	ETHYLBENZENE	87.00 PPB	277.0
10	M,P-XYLENE	177.5 PPB	294.4
11	O-XYLENE	92.84 PPB	347.3

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
100 PPB BTEX

S.C. Ready		105+ GC Function		May 17, 95 15:08	
-- Analysis No 25		-- Run at - May 17, 95		14:41 -	
Pk No	Name	Conc/Area	Term	Ret. time	
3	Unknown	31.74 mV	-No-	32.3 sec	
4	Unknown	56.83 mV	-No-	33.3 sec	
5	benzene	100.0 ppo	-No-	34.3 sec	
6	Unknown	1.090 mV	-No-	35.0 sec	
7	toluene	100.0 ppo	-No-	145.0 sec	
8	Unknown	0.177 mV	-No-	255.0 sec	
9	ethylbenzene	100.0 ppo	-No-	257.5 sec	
10	m,p-xylene	200.0 ppo	-No-	264.4 sec	
11	o-xylene	99.99 ppo	-No-	347.6 sec	
- Detected 11 peaks. Use ↑ ↓ to scroll				[ 505 sec]	





TIME PRINTED: MAY 17,95 15:18

SAMPLE TIME: MAY 17,95 15:09

## METHOD

SLOPE UP	0.500	MV/SEC
SLOPE DOWN	1.500	MV/SEC
MIN AREA	0.000	MVSEC
MIN HEIGHT	0.000	MV
ANALYSIS DELAY	0.0	SEC
WINDOW PERCENT	10.0	%
DET FLOW	12	ML/MIN
B/F FLOW	12	ML/MIN
AUX FLOW	0	ML/MIN
OVEN TEMP	40	C
AMB TEMP	31	C
MAX GAIN	1000	
ANALYSIS TIME	500.0	SEC

## PEAK REPORT

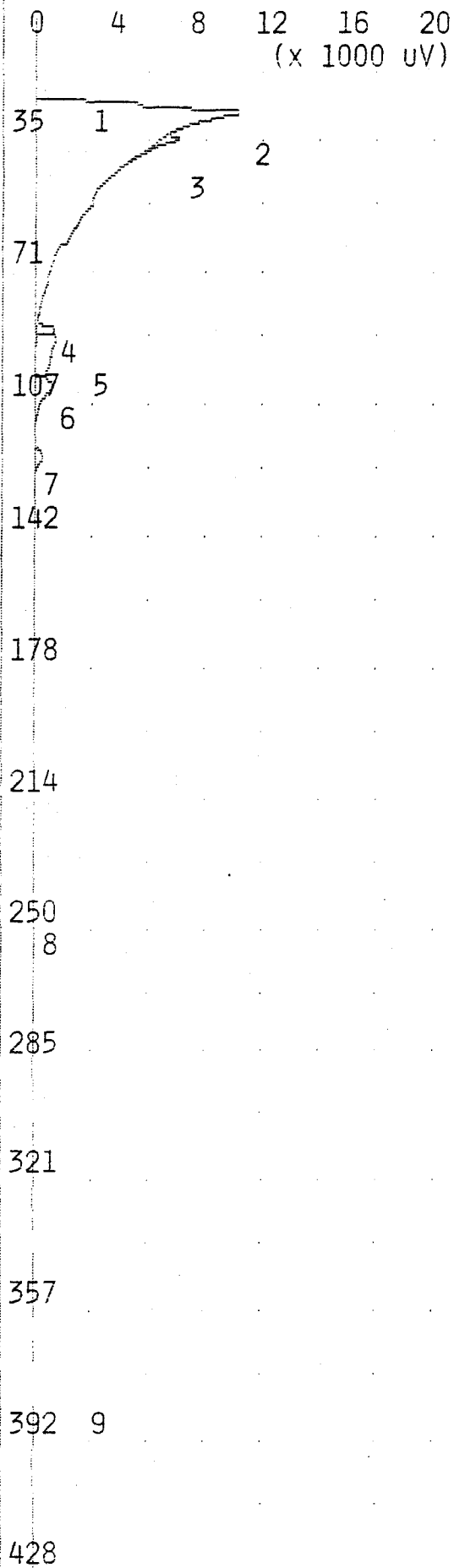
PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.025 MVS	20.5
2	UNKNOWN	4.491 VSEC	26.8
3	UNKNOWN	21.96 MVS	54.2
4	BENZENE	1.045 PPB	84.4
5	UNKNOWN	2.850 MVS	91.8
6	UNKNOWN	3.364 MVS	95.8
7	UNKNOWN	7.268 MVS	100.5

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
AIR BLANK

## ANALYSIS #27

## 10S+ GC FUNCTION ANALYSIS REPORT



TIME PRINTED: MAY 17,95 15:29

SAMPLE TIME: MAY 17,95 15:21

## METHOD

SLOPE UP	0.500	MV/SEC
SLOPE DOWN	1.500	MV/SEC
MIN AREA	0.000	MVSEC
MIN HEIGHT	0.000	MV
ANALYSIS DELAY	0.0	SEC
WINDOW PERCENT	10.0	%
DET FLOW	12	ML/MIN
B/F FLOW	12	ML/MIN
AUX FLOW	0	ML/MIN
OVEN TEMP	40	C
AMB TEMP	31	C
MAX GAIN	1000	
ANALYSIS TIME	500.0	SEC

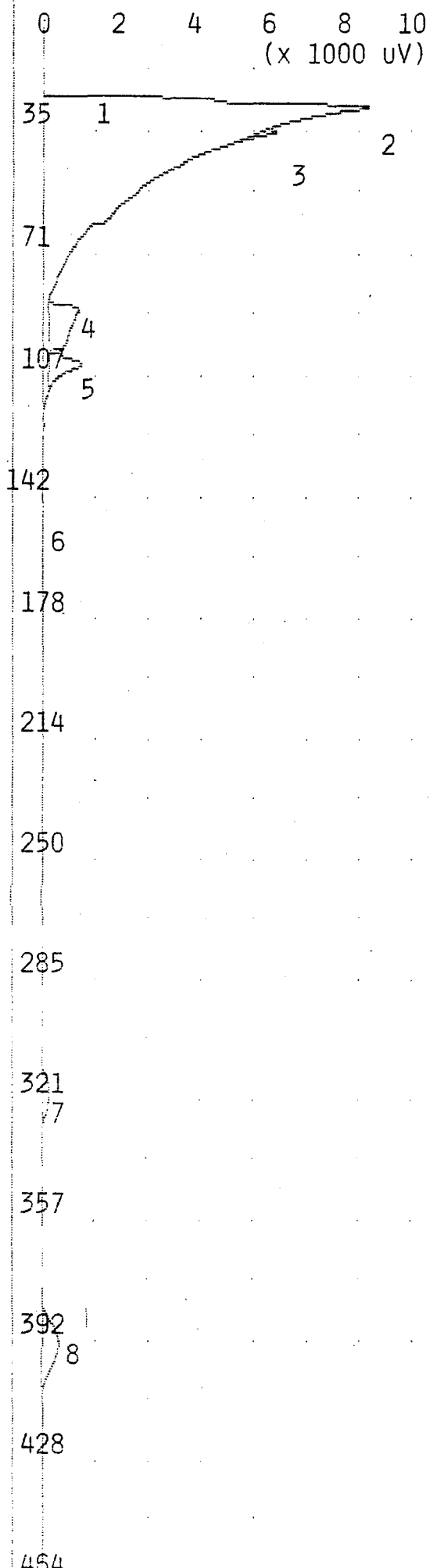
## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.767 MVS	21.1
2	UNKNOWN	237.5 MVS	25.9
3	UNKNOWN	2.292 MVS	33.2
4	BENZENE	1.068 PPB	84.8
5	UNKNOWN	8.449 MVS	88.0
6	UNKNOWN	5.824 MVS	100.1
7	UNKNOWN	3.057 MVS	119.3
8	ETHYLBENZENE	7.507 PPB	251.4
9	O-XYLENE	12.86 PPB	381.3

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
017-024BH  
0.5- 2.5 10g

## ANALYSIS #28 10S+ GC FUNCTION ANALYSIS REPORT



TIME PRINTED: MAY 17,95 15:41

SAMPLE TIME: MAY 17,95 15:33

## METHOD

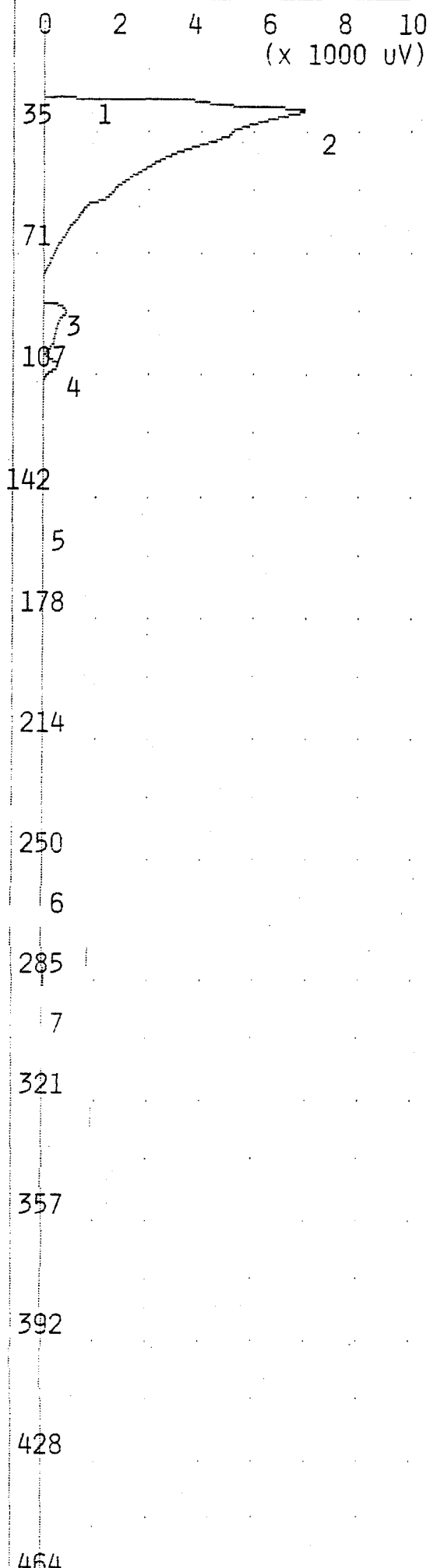
SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 31 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.147 MVS	21.2
2	UNKNOWN	205.7 MVS	26.2
3	UNKNOWN	1.139 MVS	33.6
4	BENZENE	4.457 PPB	85.7
5	UNKNOWN	4.166 MVS	101.2
6	TOLUENE	1.165 PPB	146.2
7	M,P-XYLENE	43.98 PPB	317.6
8	UNKNOWN	12.97 MVS	393.0

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
017-024BH  
4.0- 6.0 10G



TIME PRINTED: MAY 17,95 15:55

SAMPLE TIME: MAY 17,95 15:46

## METHOD

SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 31 C  
MAX GAIN 1000

ANALYSIS TIME 500.0 SEC

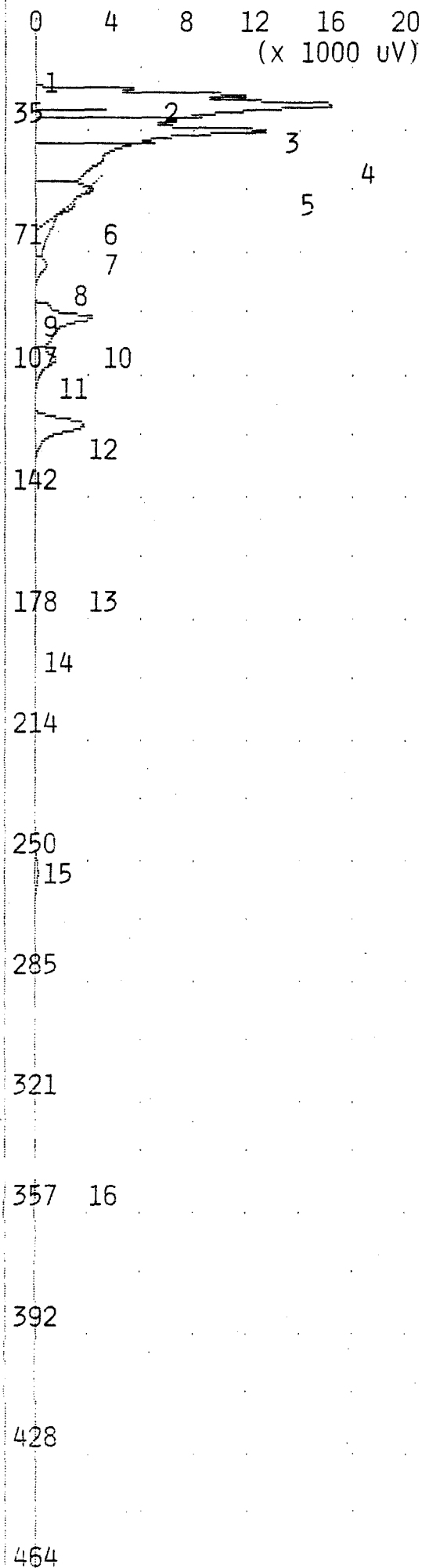
## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.164 MVS	21.4
2	UNKNOWN	160.2 MVS	27.2
3	BENZENE	5.662 PPB	86.5
4	UNKNOWN	5.613 MVS	102.0
5	TOLUENE	1.442 PPB	148.0
6	ETHYLBENZENE	3.653 PPB	255.2
7	M,P-XYLENE	8.594 PPB	295.2

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
017-025BH  
0.5- 2.5 10G





TIME PRINTED: MAY 17,95 16:06

SAMPLE TIME: MAY 17,95 15:58

## METHOD

SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 31 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.904 MVS	4.7
2	UNKNOWN	7.654 MVS	21.3
3	UNKNOWN	23.49 MVS	22.8
4	UNKNOWN	85.60 MVS	26.0
5	UNKNOWN	91.80 MVS	33.4
6	UNKNOWN	0.513 MVS	42.0
7	UNKNOWN	37.83 MVS	50.8
8	UNKNOWN	0.840 MVS	55.1
9	UNKNOWN	5.843 MVS	73.2
10	BENZENE	10.65 PPB	88.1
11	UNKNOWN	8.634 MVS	100.2
12	UNKNOWN	15.93 MVS	119.2
13	UNKNOWN	3.533 MVS	168.8
14	UNKNOWN	2.439 MVS	187.8
15	ETHYLBENZENE	16.37 PPB	251.2
16	O-XYLENE	4.179 PPB	344.6

## NOTES

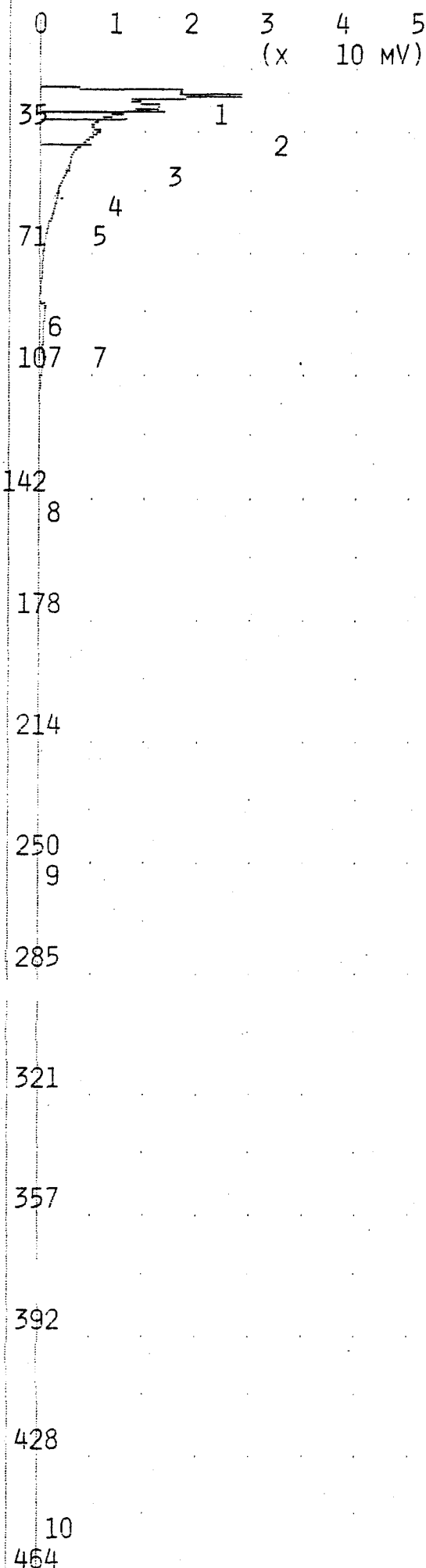
JOE BYRD, JR.

DULUTH ANGB

017-024BH

8.0-10.0 15G

ANALYSIS #31 10S+ GC FUNCTION ANALYSIS REPORT



TIME PRINTED: MAY 17,95 16:18  
SAMPLE TIME: MAY 17,95 16:10

METHOD

SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 31 C  
MAX GAIN 1000

ANALYSIS TIME 500.0 SEC

PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	24.96 MVS	21.1
2	UNKNOWN	51.13 MVS	22.6
3	UNKNOWN	88.87 MVS	25.9
4	UNKNOWN	137.0 MVS	33.0
5	UNKNOWN	0.507 MVS	43.9
6	BENZENE	5.534 PPB	84.9
7	UNKNOWN	7.535 MVS	100.0
8	TOLUENE	0.883 PPB	145.8
9	ETHYLBENZENE	3.561 PPB	252.0
10	UNKNOWN	0.337 MVS	442.4

NOTES

JOE BYRD, JR.  
DULUTH ANGB  
017-025BH  
4.0- 6.0 10G

## ANALYSIS #32

## 10S+ GC FUNCTION ANALYSIS REPORT

0 1 2 3 4 5  
(x 10 mV)

TIME PRINTED: MAY 17,95 16:30

SAMPLE TIME: MAY 17,95 16:22

## METHOD

SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 31 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.054 MVS	21.1
2	UNKNOWN	58.48 MVS	26.3
3	UNKNOWN	33.14 MVS	33.8
4	UNKNOWN	58.62 MVS	40.0
5	BENZENE	96.14 PPB	85.6
6	UNKNOWN	1.170 MVS	100.5
7	TOLUENE	80.53 PPB	146.4
8	UNKNOWN	0.430 MVS	251.4
9	ETHYLBENZENE	64.00 PPB	277.8
10	M,P-XYLENE	115.2 PPB	296.5
11	O-XYLENE	108.1 PPB	349.6

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
100 PPB BTEX

35 1  
2  
3  
4

71

107 6

142

7

178

214

250

8

285 9

10

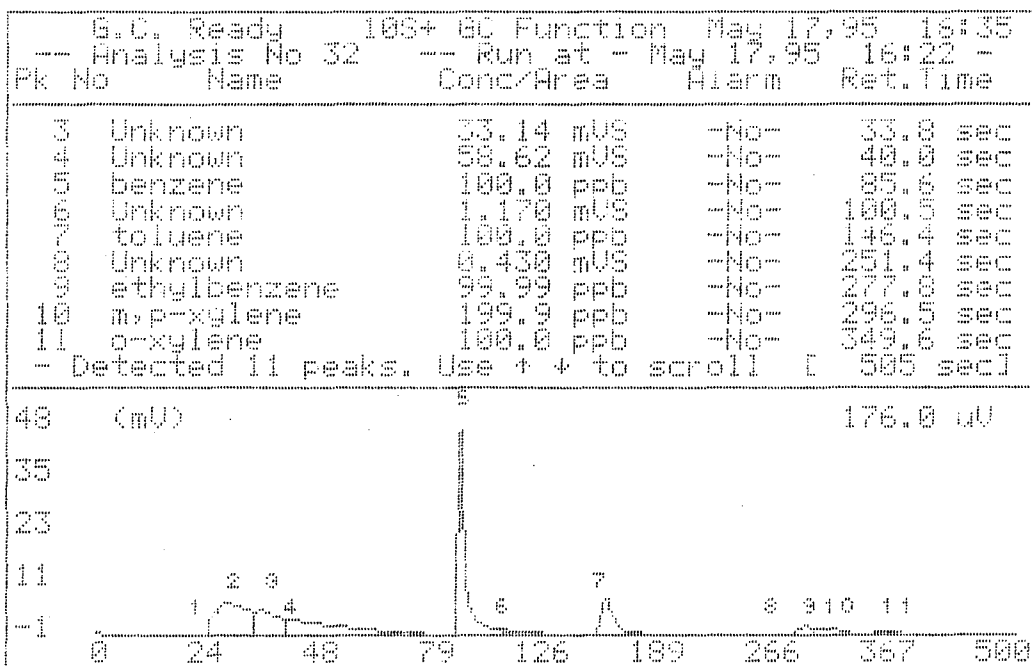
321

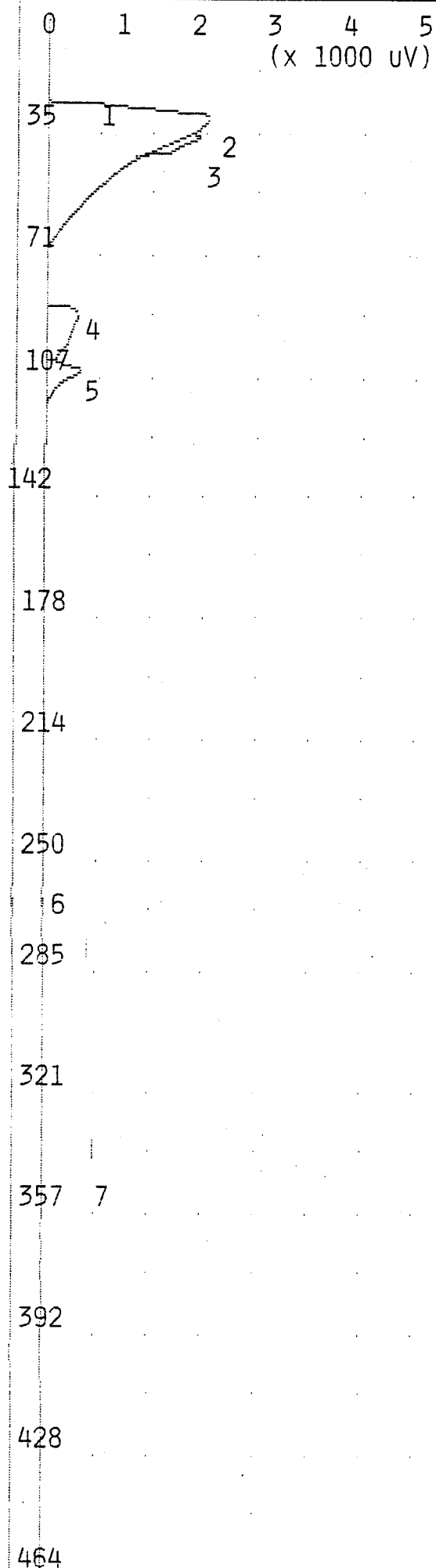
357 11

392

428

464





TIME PRINTED: MAY 17,95 16:44

SAMPLE TIME: MAY 17,95 16:36

## METHOD

SLOPE UP 0.500 MV/SEC

SLOPE DOWN 1.500 MV/SEC

MIN AREA 0.000 MVSEC

MIN HEIGHT 0.000 MV

ANALYSIS DELAY 0.0 SEC

WINDOW PERCENT 10.0 %

DET FLOW 12 ML/MIN

B/F FLOW 12 ML/MIN

AUX FLOW 0 ML/MIN

OVEN TEMP .40 C

AMB TEMP 32 C

MAX GAIN 1000

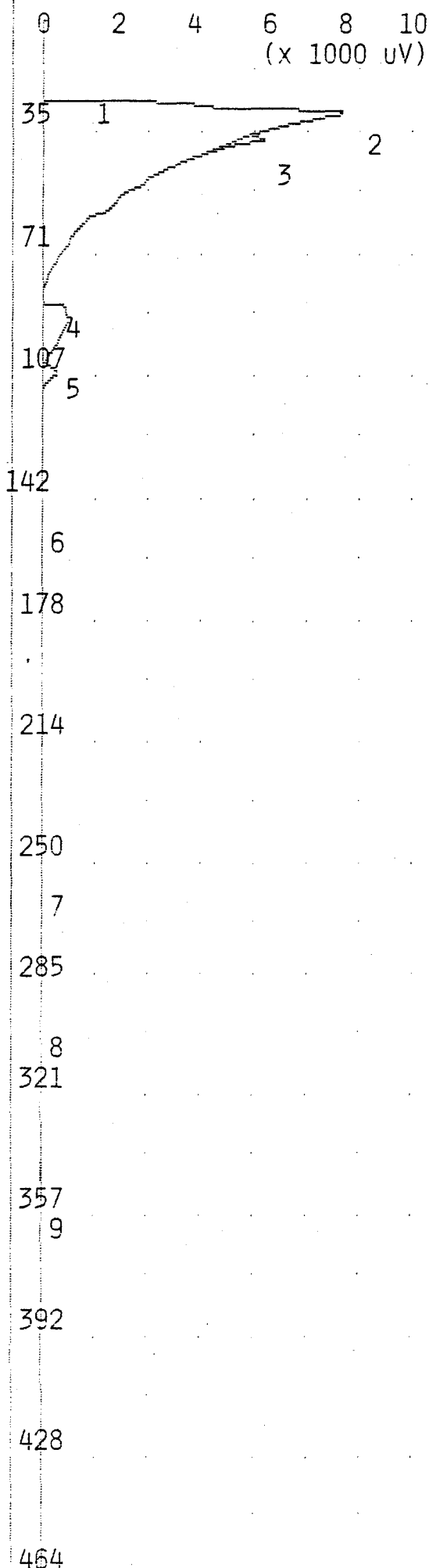
ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.096 MVS	21.8
2	UNKNOWN	66.38 MVS	28.9
3	UNKNOWN	1.179 MVS	34.7
4	BENZENE	4.979 PPB	87.0
5	UNKNOWN	5.104 MVS	102.8
6	ETHYLBENZENE	4.472 PPB	257.3
7	O-XYLENE	3.847 PPB	342.6

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
AIR BLANK



TIME PRINTED: MAY 17,95 16:56

SAMPLE TIME: MAY 17,95 16:48

## METHOD

SLOPE UP 0.500 MV/SEC

SLOPE DOWN 1.500 MV/SEC

MIN AREA 0.000 MVSEC

MIN HEIGHT 0.000 MV

ANALYSIS DELAY 0.0 SEC

WINDOW PERCENT 10.0 %

DET FLOW 12 ML/MIN

B/F FLOW 12 ML/MIN

AUX FLOW 0 ML/MIN

OVEN TEMP 40 C

AMB TEMP 32 C

MAX GAIN 1000

ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.048 MVS	22.0
2	UNKNOWN	187.3 MVS	28.0
3	UNKNOWN	1.479 MVS	35.8
4	BENZENE	5.285 PPB	88.2
5	UNKNOWN	2.189 MVS	103.8
6	TOLUENE	3.223 PPB	149.2
7	ETHYLBENZENE	6.868 PPB	256.5
8	M,P-XYLENE	11.97 PPB	300.5
9	O-XYLENE	0.894 PPB	355.0

## NOTES

JOE BYRD, JR.

DULUTH ANGB

017-022BH

0.5- 2.5 10G

0 4 8 12 16 20  
(x 1000 uV)

TIME PRINTED: MAY 17,95 17:08

SAMPLE TIME: MAY 17,95 16:59

## METHOD

SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 32 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.727 MVS	6.0
2	UNKNOWN	1.583 MVS	11.0
3	UNKNOWN	4.424 MVS	25.1
4	UNKNOWN	15.74 MVS	27.6
5	UNKNOWN	197.2 MVS	31.0
6	UNKNOWN	2.110 MVS	39.3
7	BENZENE	3.015 PPB	85.0
8	UNKNOWN	6.483 MVS	92.1
9	UNKNOWN	2.666 MVS	108.1
10	TOLUENE	3.050 PPB	153.6
11	ETHYLBENZENE	6.981 PPB	256.0
12	M,P-XYLENE	8.502 PPB	304.5

## NOTES

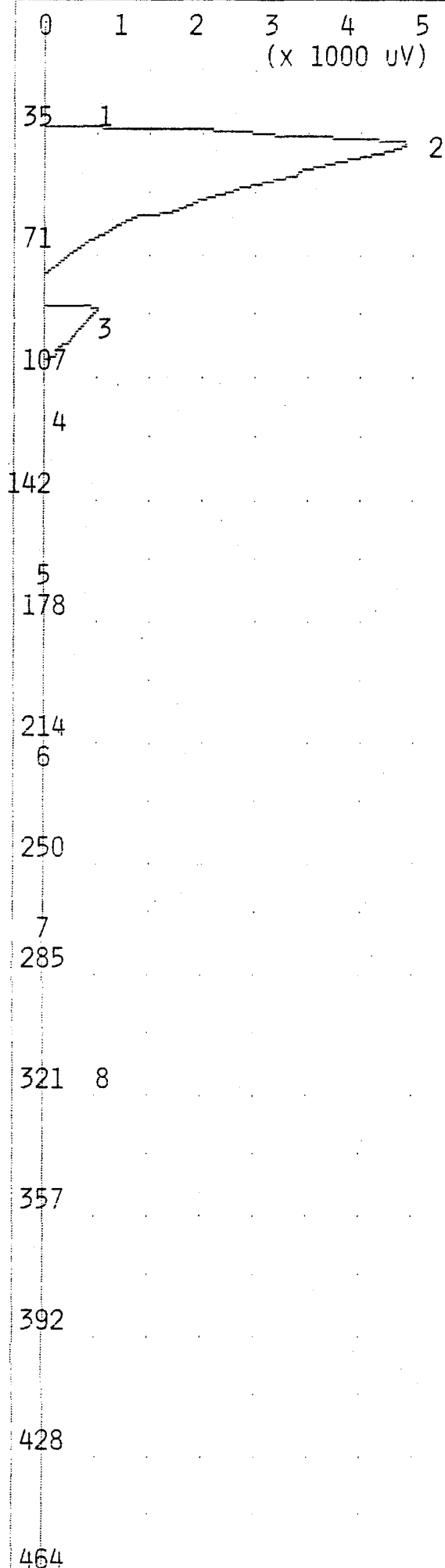
JOE BYRD, JR.

DULUTH ANGB

017-023BH

0.5- 2.5 10G

LH



TIME PRINTED: MAY 17,95 17:21

SAMPLE TIME: MAY 17,95 17:13

## METHOD

SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 32 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.098 MVS	28.9
2	UNKNOWN	131.8 MVS	36.2
3	BENZENE	10.34 PPB	85.0
4	UNKNOWN	2.628 MVS	114.0
5	TOLUENE	3.128 PPB	159.2
6	UNKNOWN	0.453 MVS	212.4
7	ETHYLBENZENE	37.21 PPB	262.4
8	M,P-XYLENE	97.54 PPB	310.4

## NOTES

JOE BYRD, JR.

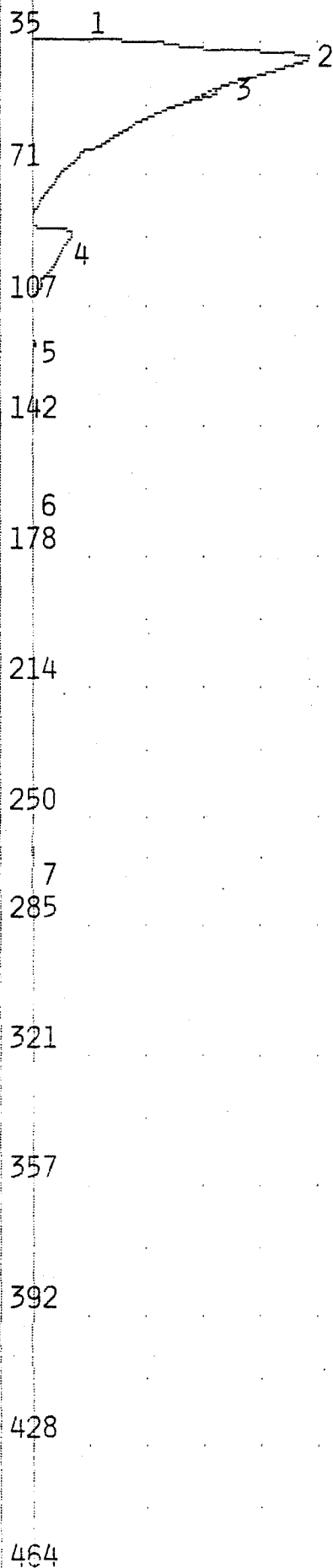
DULUTH ANGB

017-023BH

4.0- 6.0 10G



0 2 4 6 8 10  
(x 1000 uV)



TIME PRINTED: MAY 17,95 17:33

SAMPLE TIME: MAY 17,95 17:24

## METHOD

SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 32 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.120 MVS	29.4
2	UNKNOWN	172.2 MVS	37.7
3	UNKNOWN	0.520 MVS	47.0
4	BENZENE	12.89 PPB	85.4
5	UNKNOWN	3.923 MVS	115.0
6	TOLUENE	3.273 PPB	161.0
7	ETHYLBENZENE	4.339 PPB	263.7

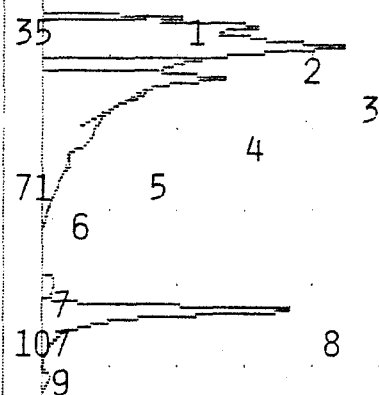
## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
017-028BH  
0.5- 2.5 10G

## ANALYSIS #38

## 10S+ GC FUNCTION ANALYSIS REPORT

0 4 8 12 16 20  
(x 1000 UV)



TIME PRINTED: MAY 17,95 17:44

SAMPLE TIME: MAY 17,95 17:36

## METHOD

SLOPE UP 0.500 MV/SEC  
SLOPE DOWN 1.500 MV/SEC  
MIN AREA 0.000 MVSEC  
MIN HEIGHT 0.000 MV  
ANALYSIS DELAY 0.0 SEC  
WINDOW PERCENT 10.0 %  
DET FLOW 12 ML/MIN  
B/F FLOW 12 ML/MIN  
AUX FLOW 0 ML/MIN  
OVEN TEMP 40 C  
AMB TEMP 32 C  
MAX GAIN 1000  
ANALYSIS TIME 500.0 SEC

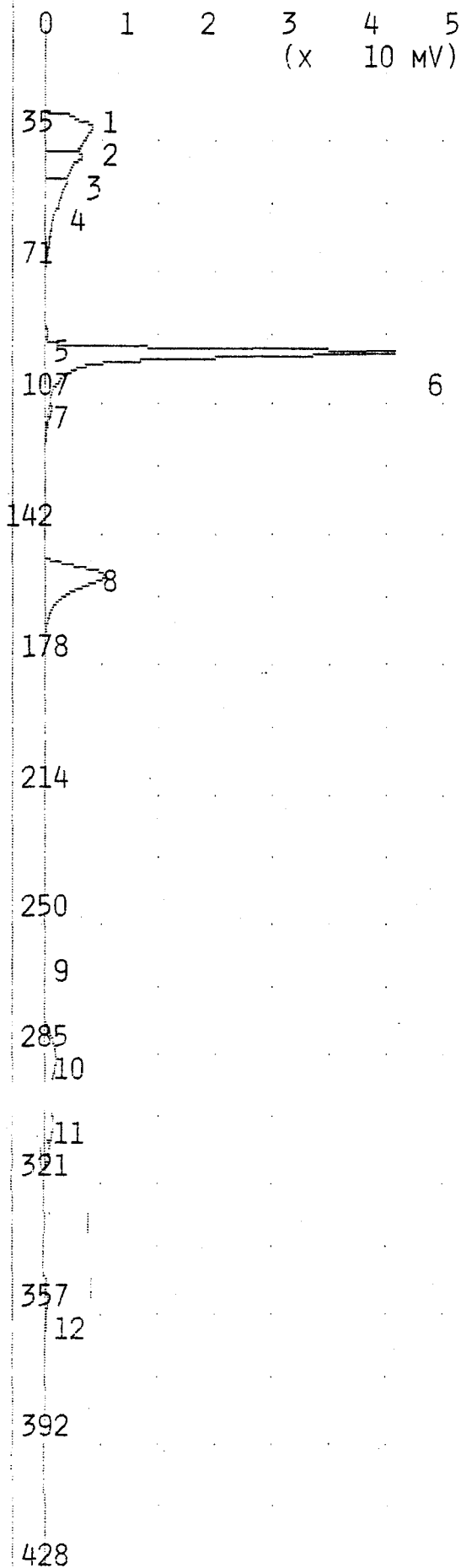
## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	10.19 MVS	24.6
2	UNKNOWN	23.77 MVS	26.6
3	UNKNOWN	82.20 MVS	31.6
4	UNKNOWN	98.74 MVS	38.9
5	UNKNOWN	0.429 MVS	42.6
6	UNKNOWN	0.204 MVS	58.3
7	BENZENE	2.644 PPB	85.4
8	UNKNOWN	47.38 MVS	92.0
9	UNKNOWN	1.336 MVS	107.4
10	ETHYLBENZENE	5.443 PPB	261.8

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
017-028BH  
4.0- 6.0 6G

## ANALYSIS #39 10S+ GC FUNCTION ANALYSIS REPORT



TIME PRINTED: MAY 17,95 17:56

SAMPLE TIME: MAY 17,95 17:48

## METHOD

SLOPE UP 0.500 MV/SEC

SLOPE DOWN 1.500 MV/SEC

MIN AREA 0.000 MVSEC

MIN HEIGHT 0.000 MV

ANALYSIS DELAY 0.0 SEC

WINDOW PERCENT 10.0 %

DET FLOW 12 ML/MIN

B/F FLOW 12 ML/MIN

AUX FLOW 0 ML/MIN

OVEN TEMP 40 C

AMB TEMP 32 C

MAX GAIN 1000

ANALYSIS TIME 500.0 SEC

## PEAK REPORT

PK	COMPOUND NAME	AREA/CONC	R.T.
1	UNKNOWN	0.069 MVS	23.1
2	UNKNOWN	59.62 MVS	29.6
3	UNKNOWN	32.97 MVS	37.6
4	UNKNOWN	48.87 MVS	44.8
5	BENZENE	1.894 PPB	85.4
6	UNKNOWN	172.4 MVS	90.9
7	UNKNOWN	0.789 MVS	106.0
8	TOLUENE	90.99 PPB	151.8
9	UNKNOWN	2.160 MVS	256.8
10	ETHYLBENZENE	95.85 PPB	284.0
11	M,P-XYLENE	137.7 PPB	303.4
12	O-XYLENE	31.27 PPB	352.6

## NOTES

JOE BYRD, JR.  
DULUTH ANGB  
100 PPB BTX

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**APPENDIX H**  
**INSPECTION DERIVED WASTE MANAGEMENT**

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## **SECTION H.1 INTRODUCTION**

This appendix concerns the contents of the twenty-nine drums of the Facility Investigation (FI) derived waste which was generated during the recent RCRA Facility Investigation at the 148th Fighter Group, Minnesota ANG, Duluth, Minnesota. Twenty-one of these drums contain soil cuttings, two contain composite soil, two contain decontamination water, and six contain monitor well development and purge water. The attached Table H.1 is a summary of the recommended disposition for each of these drums. The attached Table H.2 is a summary of the maximum concentrations of analytes contained in each drum.

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## INVESTIGATION DERIVED WASTE LOG

Drum	Contents (Water/Soil Cuttings/Borehole/MW/Decon)	% Full
017- 019 BH	Drill Cuttings - Soil 7/20/94	~20
<del>017</del> 017- 020 BH	Drill Cuttings - Soil 7/20/94	~15
017-013BH 017-012BH 017-014BH	Drill Cuttings - Soil 7/18/94 - 7/19/94	~35
017-015BH	Drill Cuttings - Soil 7/18/94	~15
017- 016BH	Drill Cuttings - Soil 7/18/94	~15
017- 011BH	Drill Cuttings - Soil 7/19/94	~20
017- 010BH	Drill Cuttings - Soil 7/19/94	~15
017- Composite Soil	Composite Soil 7/18/94 - 7/20/94	40
017- Decon Water	Decon. Water 7/18/94 - 7/20/94	100
017- 018 BH 017-017BH	Drill Cuttings - Soil 7/19/94 - 7/20/94	~30

Location of Drums: on Pad at Site 17

Date Stored: 7/20/94

Site Manager: Kathryn Pritchett

## INVESTIGATION DERIVED WASTE LOG

Drum	Contents (Water/Soil Cuttings/Borehole/MW/Decon)	% Full
017 - 009mw	Purge water 2/28/92	~50 ?

Location of Drums: On Pad at Site 17  
Date Stored: 7/28/94  
Site Manager: Kathryn Patterson

## INVESTIGATION DERIVED WASTE LOG

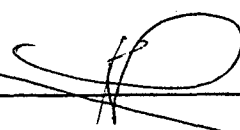
Drum	Contents (Water/Soil Cuttings/Borehole/MW/Decon)	% Full
021- 018 BH	Drill Cuttings - Soil 7/14/94	50
021-026 mw	Drill Cuttings - Soil 7/15/94	<del>75</del> 90
021- 021 BH	Drill Cuttings - Soil 7/13/94	30
021- 019 BH	Drill Cuttings - Soil 7/14/94	75
021- Decon. water	Decon. water 7/12/94 - 7/15/94	100
021- Composite Soil	Composite Soil 7/12/94 - 7/15/94	30
021- 015 BH	Drill Cuttings - Soil 7/14/94	30
021- 009 mw	Purge water ~ 8 gallons 7/22/94	15
021- 010 mw	Purge water ~ 12 gallons 7/22/94	22
021- 026 mw	Purge water ~ 50 gallons 7/22/94	91

Location of Drums: South of Building 240

Date Stored: 7/21/94 and 7/26/94

Site Manager: Kathryn Peterson

## INVESTIGATION DERIVED WASTE LOG

Drum	Contents (Water/Soil Cuttings/Borehole/MW/Decon)	% Full
021- 026mw	Development water & some Purge water 7/1/94 ~40 gallons 7/22/94	73
021- 014mw	Purge water 7/22/94 ~20 gallons	36
021- 016BH	Drill Cuttings - Soil 7/14/94	30
021- 025BH	Drill Cuttings - Soil 7/12/94	30
021- 024BH - 021-023BH	Drill Cuttings - Soil 7/12/94	70
021- 022BH	Drill Cuttings - Soil 7/13/94	50
021- 017BH	Drill Cuttings - Soil 7/15/94	30
021- 020BH	Drill Cuttings - Soil 7/13/94	50
		

Location of Drums: South of Building 240

Date Stored: 7/21/94 and 7/26/94

Site Manager: Kathryn Pittsett

**Table H.1**  
**Recommended Disposition of Inspection Derived Waste**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

<b>Drum Identification</b>	<b>Origin</b>	<b>Recommended Disposition</b>	<b>Rationale</b>
021-018BH	Drill Cuttings Soil 7/14/94	Dispose of in a landfill which accepts TPH contaminated soil or send to a soil recycler.	Analytical results show TPH exceeds the State action level.
021-026MW	Drill Cuttings Soil 7/15/94	Dispose of in a landfill which accepts TPH contaminated soil or send to a soil recycler.	Analytical results show TPH exceeds the State action level.
021-021BH	Drill Cuttings Soil 7/13/94	Dispose of in a landfill which accepts Benzene contaminated soil or send to a soil recycler.	Analytical results show Benzene significantly exceeds the State action level.
021-019BH	Drill Cuttings Soil 7/14/94	Dispose of in a landfill which accepts Benzene contaminated soil or send to a soil recycler.	Analytical results show Benzene significantly exceeds the State action level.
021-Decontamination Water	Decontamination Water 07/12/94 - 07/15/94	Determine whether City of Duluth Wastewater Management will allow Benzene, TPH, Trichloroethane and Nickel contaminated water to be disposed of in the sewer system.	Potential contaminants contacted sampling equipment; Benzene, TPH, Trichloroethane and Nickel are the only contaminants which significantly exceeded State action levels.
021-Composite Soil	Composite Soil 07/12/94 - 07/15/94	Dispose of in a landfill which accepts Benzene contaminated soil or send to a soil recycler.	Analytical results show Benzene significantly exceeds the State action level.
021-015BH	Drill Cuttings Soil 7/14/94	Dispose as a solid waste.	No analytes exceeded TCLP regulatory limits. * Concentrations of analytes for which TCLP regulatory levels do not exist were equal to or less than site-specific background concentrations.

BH - Borehole  
ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
mg/L - milligrams per liter

**Table H.1 (Continued)**  
**Recommended Disposition of Inspection Derived Waste**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

<b>Drum Identification</b>	<b>Origin</b>	<b>Recommended Disposition</b>	<b>Rationale</b>
021-009MW	Purge Water ~ 8 gallons 7/22/94	Determine whether City of Duluth Wastewater Management will allow metal contaminated water to be disposed of in the sewer system.	Analytical results show Nickel exceeds Federal and State action levels.
021-010MW	Purge Water ~ 12 gallons 7/22/94	Determine whether City of Duluth Wastewater Management will allow metal contaminated water to be disposed of in the sewer system.	Analytical results show Nickel exceeds Federal and State action levels.
021-026MW	Purge Water ~ 50 gallons 7/22/94	Determine whether City of Duluth Wastewater Management will allow metal contaminated water to be disposed of in the sewer system.	Analytical results show Nickel exceeds Federal and State action levels.
021-026MW	Development Water & Some Purge Water ~ 40 gallons 7/22/94	Determine whether City of Duluth Wastewater Management will allow metal contaminated water to be disposed of in the sewer system.	Analytical results show Nickel exceeds Federal and State action levels.
021-014MW	Purge Water ~ 20 gallons 7/22/94	Determine whether City of Duluth Wastewater Management will allow Trichloroethane contaminated water to be disposed of in the sewer system.	Analytical results show Trichloroethane exceeds Federal and State action levels.

BH - Borehole

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
mg/L - milligrams per liter

**Table H.1 (Continued)**  
**Recommended Disposition of Inspection Derived Waste**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

<b>Drum Identification</b>	<b>Origin</b>	<b>Recommended Disposition</b>	<b>Rationale</b>
021-016BH	Drill Cuttings Soil 7/14/94	Dispose of in a landfill which accepts Nickel and Lead contaminated soil or send to a soil recycler.	Analytical results show Nickel and Lead exceed the State action levels.
021-025BH	Drill Cuttings Soil 7/12/94	Dispose of in a landfill which accepts Nickel contaminated soil or send to a soil recycler.	Analytical results show Nickel significantly exceeds the State action level.
021-024BH & 021-023BH	Drill Cuttings Soil 7/12/94	Dispose of in a landfill which accepts Benzene and TPH contaminated soil or send to a soil recycler.	Analytical results show Benzene and TPH significantly exceed Federal and State action level.
021-022BH	Drill Cuttings Soil 7/13/94	Dispose of in a landfill which accepts Benzene contaminated soil or send to a soil recycler.	Analytical results show Benzene exceeds the State action level.
021-017BH	Drill Cuttings Soil 7/15/94	Dispose of in a landfill which accepts Nickel contaminated soil or send to a soil recycler.	Analytical results show Nickel significantly exceeds the State action level.
021-020BH	Drill Cuttings Soil 7/13/94	Dispose of in a landfill which accepts Benzene contaminated soil or send to a soil recycler.	Analytical results show Benzene exceeds the Federal and State action levels.
017-019BH	Drill Cuttings Soil 7/20/94	Dispose of in a landfill which accepts TPH contaminated soil or send to a soil recycler.	Analytical results show TPH exceeds the State action level.
017-020BH	Drill Cuttings Soil 7/20/94	Dispose of in a landfill which accepts TPH contaminated soil or send to a soil recycler.	Analytical results show TPH exceeds the State action level.
017-013BH 017-012BH 017-014BH	Drill Cuttings Soil 7/18/94 - 7/19/94	Dispose of in a landfill which accepts TPH contaminated soil or send to a soil recycler.	Analytical results show TPH significantly exceeds the State action level.

BH - Borehole  
ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
mg/L - milligrams per liter

**Table H.1 (Concluded)**  
**Recommended Disposition of Inspection Derived Waste**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

<b>Drum Identification</b>	<b>Origin</b>	<b>Recommended Disposition</b>	<b>Rationale</b>
017-015BH	Drill Cuttings Soil 7/18/94	Dispose of in a landfill which accepts TPH contaminated soil or send to a soil recycler.	Analytical results show TPH significantly exceeds the State action level.
017-016BH	Drill Cuttings Soil 7/18/94	Dispose of in a landfill which accepts TPH contaminated soil or send to a soil recycler.	Analytical results show TPH significantly exceeds the State action level.
017-011BH	Drill Cuttings Soil 7/29/94	Dispose of in a landfill which accepts TPH contaminated soil or send to a soil recycler.	Analytical results show TPH significantly exceeds the State action level.
017-010BH	Drill Cuttings Soil 7/19/94	Dispose of in a landfill which accepts TPH contaminated soil or send to a soil recycler.	Analytical results show TPH significantly exceeds the State action level.
017-Composite Soil	Composite Soil	Dispose of in a landfill which accepts TPH contaminated soil or send to a soil recycler.	Analytical results show TPH significantly exceeds the State action level.
017-Decontamination Water	Decontamination Water 7/18/94 - 7/20/94	Determine whether City of Duluth Wastewater Management will allow TPH contaminated water to be disposed of in the sewer system.	Potential contaminants contacted sampling equipment; TPH is the only contaminant which significantly exceeds State action levels.
017-018BH 017-017BH	Drill Cuttings Soil 7/19/94 - 7/20/94	Dispose of in a landfill which accepts TPH contaminated soil or send to a soil recycler.	Analytical results show TPH significantly exceeds the State action level.
017-009MW	Purge Water 2/28/92	Determine whether City of Duluth Wastewater Management will allow TPH contaminated water to be disposed of in the sewer system.	Potential contaminants contacted sampling equipment; TPH is the only contaminant which significantly exceeds State action levels.

BH - Borehole  
ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
mg/L - milligrams per liter



Table H.2

**Site Inspection Derived Waste - Drum Containing Soil Cuttings from 017-Composite Soil**  
**148th FG, Duluth Air National Guard Base**  
**Duluth, Minnesota**

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
<b>SVOC</b>			
Acenaphthene	1,000 ug/kg	NA	-
Benzo(a)Anthracene	2,800 ug/kg	NA	-
Benzo(b)Fluoranthene	420 ug/kg	NA	-
Benzo(k)Fluoranthene	2,900 ug/kg	NA	-
Benzo(a)Pyrene	3,100 ug/kg	NA	-
Benzo(g,h,i)Perylene	2,000 ug/kg	NA	-
di-n-Butyl phthalate	430 ug/kg	NA	-
Carbazole	870 ug/kg	NA	-
Chrysene	3,600 ug/kg	NA	-
Dibenzofuran	450 ug/kg	NA	-
bis(2-Ethylhexyl)Phthalate	820 ug/kg	NA	-
Fluoranthene	5,800 ug/kg	NA	-
Indeno(1,2,3-cd)Pyrene	1,800 ug/kg	NA	-
Naphthalene	400 ug/kg	NA	-
Phenanthrene	4,900 ug/kg	NA	-
Pyrene	4,900 ug/kg	NA	-
<b>TPH</b>			
TPH	7,700 mg/kg	NA	-

BH - Borehole

 ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

 ug/L - micrograms per liter  
 mg/L - milligrams per liter

**Table H.3**  
**Site Inspection Derived Waste - Drum Containing Soil Cuttings from 017-010BH**  
**148th FG, Duluth Air National Guard Base**  
**Duluth, Minnesota**

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
TPH	180 mg/kg	NA	-

BH - Borehole

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
mg/L - milligrams per liter

Table H.4

Site Inspection Derived Waste - Drum Containing Soil Cuttings from 017-011BH  
 148th FG, Duluth Air National Guard Base  
 Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
SVOC			
Acenaphthene	1,000 ug/kg	NA	-
Benzo(a)Anthracene	2,800 ug/kg	NA	-
Benzo(k)Fluoranthene	2,900 ug/kg	NA	-
Benzo(a)Pyrene	3,100 ug/kg	NA	-
Benzo(g,h,i)Perylene	2,000 ug/kg	NA	-
Carbazole	870 ug/kg	NA	-
Chrysene	3,600 ug/kg	NA	-
Dibenzofuran	450 ug/kg	NA	-
Fluoranthene	5,800 ug/kg	NA	-
Indeno(1,2,3-cd)Pyrene	1,800 ug/kg	NA	-
Naphthalene	400 ug/kg	NA	-
Phenanthrene	4,900 ug/kg	NA	-
Pyrene	4,900 ug/kg	NA	-
TPH			
TPH	180 mg/kg	NA	-

BH - Borehole

ug/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

ug/L - micrograms per liter

mg/L - milligrams per liter

Table H.5  
 Site Inspection Derived Waste - Drum Containing Soil Cuttings from 017-012BH, 017-013BH, & 017-014BH  
 148th FG, Duluth Air National Guard Base  
 Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
<b>SVOC</b>			
Benzo(b)Fluoranthene	420 ug/kg	NA	-
di-n-Butyl phthalate	430 ug/kg	NA	-
Chrysene	370 ug/kg	NA	-
Fluoranthene	590 ug/kg	NA	-
Phenanthrene	390 ug/kg	NA	-
Pyrene	640 ug/kg	NA	-
<b>TPH</b>			
TPH	3,600 mg/kg	NA	-

BH - Borehole  
 ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
 mg/L - milligrams per liter

Table H.6  
 Site Inspection Derived Waste - Drum Containing Soil Cuttings from 017-015BH  
 148th FG, Duluth Air National Guard Base  
 Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
TPH	300 mg/kg	NA	-

BH - Borehole  
 ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
 mg/L - milligrams per liter

**Table H.7**  
**Site Inspection Derived Waste - Drum Containing Soil Cuttings from 017-016BH**  
**148th FG, Duluth Air National Guard Base**  
**Duluth, Minnesota**

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
TPH	7,700 mg/kg	NA	-

BH - Borehole  
 ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
 mg/L - milligrams per liter

Table H.8

Site Inspection Derived Waste - Drum Containing Soil Cuttings from 017-017BH & 017-018BH  
 148th FG, Duluth Air National Guard Base  
 Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
SVOC			
bis(2-Ethylhexyl)Phthalate	820 ug/kg	NA	-
Fluoranthene	600 ug/kg	NA	-
Phenanthrene	470 ug/kg	NA	-
Pyrene	460 ug/kg	NA	-
TPH			
TPH	260 mg/kg	NA	-

BH - Borehole

 ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

 ug/L - micrograms per liter  
 mg/L - milligrams per liter

**Table H.9**  
**Site Inspection Derived Waste - Drum Containing Soil Cuttings from 017-019BH**  
**148th FG, Duluth Air National Guard Base**  
**Duluth, Minnesota**

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
TPH	99 mg/kg	NA	-

BH - Borehole  
 ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
 mg/L - milligrams per liter



Table H.10  
 Site Inspection Derived Waste - Drum Containing Soil Cuttings from 017-020BH  
 148th FG, Duluth Air National Guard Base  
 Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
TPH	110 mg/kg	NA	

BH - Borehole  
 ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
 mg/L - milligrams per liter

Table H.11  
Site Inspection Derived Waste - Drum Containing Soil Cuttings from 021-Composite Soil  
148th FG, Duluth Air National Guard Base  
Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
<b>VOC</b>			
Acetone	85 ug/kg	NA	-
Benzene	1,100 ug/kg	10	TCLP
2-Butanone	31 ug/kg	NA	-
1,2-Dichloroethane	52 ug/kg	10	TCLP
Ethylbenzene	130 ug/kg	NA	-
Toluene	500 ug/kg	NA	-
Xylenes (total)	740 ug/kg	NA	-
<b>SVOC</b>			
Acenaphthene	1,000 ug/kg	NA	-
Anthracene	1,900 ug/kg	NA	-
Benzo(a)Anthracene	6,400 ug/kg	NA	-
Benzo(b)Fluoranthene	9,300 ug/kg	NA	-
Benzo(k)Fluoranthene	4,800 ug/kg	NA	-
Benzo(a)Pyrene	5,500 ug/kg	NA	-
Benzo(g,h,i)Perylene	3,500 ug/kg	NA	-
Carbazole	1,500 ug/kg	NA	-
Chrysene	7,000 ug/kg	NA	-
Fluoranthene	14,000 ug/kg	NA	-
Fluorene	920 ug/kg	NA	-
Indeno(1,2,3-cd)Pyrene	3,900 ug/kg	NA	-
Phenanthrene	8,800 ug/kg	NA	-
Pyrene	12,000 ug/kg	NA	-
<b>TPH</b>			
TPH	250 mg/kg	NA	-
<b>Pesticides</b>			
Aldrin	1.3 ug/kg	NA	-
Chlordane(technical)	47 ug/kg	0.6	TCLP 20
<b>Metal</b>			
Aluminum	17,800 mg/kg	NA	-
Arsenic	2 mg/kg	100	TCLP 20
Beryllium	1.0 mg/kg	NA	-
Cadmium	0.8 mg/kg	20	TCLP 20
Chromium	29 mg/kg	100	TCLP 20
Copper	92.6 mg/kg	NA	-
Nickel	31 mg/kg	NA	-
Lead	20 mg/kg	100	TCLP 20
Zinc	71 mg/kg	NA	-

BH - Borehole  
ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
mg/L - milligrams per liter

Table H.12

Site Inspection Derived Waste - Drum Containing Purge Water from 021-009MW  
 148th FG, Duluth Air National Guard Base  
 Duluth, Minnesota

Analyte	Maximum Concentration in Purge Water	Action Level Concentration mg/L	Standard Used
Metal			
Aluminum	1.06 mg/L	NA	-
Cadmium	0.0002 mg/L	1.0	TCLP
Chromium	0.024 mg/L	1.5	TCLP
Copper	0.02 mg/L	NA	-
Nickel	0.62 mg/L	NA	-
Zinc	0.03 mg/L	NA	-

BH - Borehole

ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
 mg/L - milligrams per liter

Table H.13  
 Site Inspection Derived Waste - Drum Containing Purge Water from 021-010MW  
 148th FG, Duluth Air National Guard Base  
 Duluth, Minnesota

Analyte	Maximum Concentration in Purge Water	Action Level Concentration mg/L	Standard Used
<b>Metal</b>			
Aluminum	3.00 mg/L	NA	-
Cadmium	0.0002 mg/L	1.0	TCLP
Chromium	0.004 mg/L	1.5	TCLP
Copper	0.02 mg/L	NA	-
Nickel	0.012 mg/L	NA	-
Zinc	0.02 mg/L	NA	-

BH - Borehole  
 ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
 mg/L - milligrams per liter

Table H.14

Site Inspection Derived Waste - Drum Containing Purge Water from 021-014MW  
148th FG, Duluth Air National Guard Base  
Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/L	Standard Used
SVOC			
Trichloroethane	68 ug/L	0.5	TCLP
Metal			
Aluminum	17.1 mg/L	NA	-
Cadmium	0.0003 mg/L	1.0	TCLP
Chromium	0.025 mg/L	5.0	TCLP
Copper	0.17 mg/L	NA	-
Nickel	0.051 mg/L	NA	-
Zinc	0.07 mg/L	NA	-

BH - Borehole

ug/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

ug/L - micrograms per liter

mg/L - milligrams per liter

Table H.15  
 Site Inspection Derived Waste - Drum Containing Soil Cuttings from 021-015BH  
 148th FG, Duluth Air National Guard Base  
 Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
TPH			
	16 mg/kg	NA	-
Metal			
Aluminum	14,400 mg/kg	NA	-
Arsenic	2 mg/kg	100	TCLP 20
Chromium	29 mg/kg	100	TCLP 20
Copper	55.2 mg/kg	NA	-
Nickel	27 mg/kg	NA	-
Lead	4.3 mg/kg	100	TCLP 20
Zinc	52 mg/kg	NA	-

BH - Borehole  
 ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
 mg/L - milligrams per liter

Table H.16

**Site Inspection Derived Waste - Drum Containing Soil Cuttings from 021-016BH**  
**148th FG, Duluth Air National Guard Base**  
**Duluth, Minnesota**

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
<b>VOC</b>			
Acetone	13 ug/kg	NA	-
<b>TPH</b>			
TPH	67 mg/kg	NA	-
<b>Metal</b>			
Aluminum	10,500 mg/kg	NA	-
Cadmium	2 mg/kg	100	TCLP 20
Chromium	26 mg/kg	100	TCLP 20
Copper	50.2 mg/kg	NA	-
Nickel	25 mg/kg	NA	-
Lead	6.9 mg/kg	100	TCLP 20
Zinc	56 mg/kg	NA	-

BTI - Borehole

ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
 mg/L - milligrams per liter

Table H.17

Site Inspection Derived Waste - Drum Containing Soil Cuttings from 021-017BH  
 148th FG, Duluth Air National Guard Base  
 Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
TPH	86 mg/kg	NA	-
Metal			
Aluminum	11,400 mg/kg	NA	-
Arsenic	1 mg/kg	100	TCLP 20
Chromium	21 mg/kg	100	TCLP 20
Copper	64.6 mg/kg	NA	-
Nickel	25 mg/kg	NA	-
Lead	3.9 mg/kg	100	TCLP 20
Zinc	47 mg/kg	NA	-

BH - Borehole

ug/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

ug/L - micrograms per liter

mg/L - milligrams per liter



**Table H.18**  
**Site Inspection Derived Waste - Drum Containing Soil Cuttings from 021-018BH**  
**148th FG, Duluth Air National Guard Base**  
**Duluth, Minnesota**

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
<b>SVOC</b>			
Acenaphthene	1,000 ug/kg	NA	-
Anthracene	1,900 ug/kg	NA	-
Benzo(a)Anthracene	6,400 ug/kg	NA	-
Benzo(b)Fluoranthene	9,300 ug/kg	NA	-
Benzo(k)Fluoranthene	4,800 ug/kg	NA	-
Benzo(a)Pyrene	5,500 ug/kg	NA	-
Benzo(g,h,i)Perylene	3,500 ug/kg	NA	-
Carbazole	1,500 ug/kg	NA	-
Chrysene	7,000 ug/kg	NA	-
Fluoranthene	14,000 ug/kg	NA	-
Fluorene	920 ug/kg	NA	-
Indeno(1,2,3-cd)Pyrene	3,900 ug/kg	NA	-
Phenanthrene	8,800 ug/kg	NA	-
Pyrene	12,000 ug/kg	NA	-
<b>TPH</b>			
TPH	125 mg/kg	NA	-
<b>Metal</b>			
Aluminum	11,000 mg/kg	NA	-
Arsenic	1 mg/kg	100	TCLP 20
Chromium	29 mg/kg	100	TCLP 20
Copper	77.9 mg/kg	NA	-
Nickel	27 mg/kg	NA	-
Lead	16 mg/kg	100	TCLP 20
Zinc	55 mg/kg	NA	-

BH - Borehole  
ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
mg/L - milligrams per liter

Table H.19  
 Site Inspection Derived Waste - Drum Containing Soil Cuttings from 021-019BH  
 148th FG, Duluth Air National Guard Base  
 Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
<b>VOC</b>			
Benzene	17 ug/kg	10	TCLP 20
<b>TPH</b>			
TPH	30 mg/kg	NA	-
<b>Metal</b>			
Aluminum	12,600 mg/kg	NA	-
Arsenic	1 mg/kg	100	TCLP 20
Chromium	24 mg/kg	100	TCLP 20
Copper	56.5 mg/kg	NA	-
Nickel	25 mg/kg	NA	-
Lead	4.0 mg/kg	100	TCLP 20
Zinc	67 mg/kg	NA	-

BH - Borehole  
 ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
 mg/L - milligrams per liter

Table H.20  
 Site Inspection Derived Waste - Drum Containing Soil Cuttings from 021-020BH  
 148th FG, Duluth Air National Guard Base  
 Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
<b>VOC</b>			
Acetone	85 ug/kg	NA	-
Benzene	140 ug/kg	10	TCLP 20
2-Butanone	31 ug/kg	NA	-
Toluene	14 ug/kg	NA	-
<b>TPH</b>			
TPH	50 mg/kg	NA	-
<b>Metal</b>			
Aluminum	10,000 mg/kg	NA	-
Cadmium	0.28 mg/kg	20	TCLP 20
Chromium	10 mg/kg	100	TCLP 20
Copper	58.2 mg/kg	NA	-
Nickel	18 mg/kg	NA	-
Lead	3.6 mg/kg	100	TCLP 20
Zinc	40 mg/kg	NA	-

BH - Borehole  
 ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
 mg/L - milligrams per liter

Table H.21  
Site Inspection Derived Waste - Drum Containing Soil Cuttings from 021-021BH  
148th FG, Duluth Air National Guard Base  
Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
<b>VOC</b>			
Benzene	47 ug/kg	10	TCLP 20
Ethylbenzene	8 ug/kg	NA	-
Toluene	19 ug/kg	NA	-
Xylenes (total)	34 ug/kg	NA	-
<b>TPH</b>			
TPH	140 mg/kg	NA	-
<b>Metal</b>			
Aluminum	11,000 mg/kg	NA	-
Arsenic	1 mg/kg	100	TCLP 20
Cadmium	0.09 mg/kg	20	TCLP 20
Chromium	12 mg/kg	100	TCLP 20
Copper	92.6 mg/kg	NA	-
Nickel	20 mg/kg	NA	-
Lead	3.0 mg/kg	100	TCLP 20
Zinc	71 mg/kg	NA	-

BH - Borehole  
ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
mg/L - milligrams per liter

Table H.22

Site Inspection Derived Waste - Drum Containing Soil Cuttings from 021-022BH  
 148th FG, Duluth Air National Guard Base  
 Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
VOC			
Benzene	120 ug/kg	10	TCLP 20
1,2-Dichloroethane	5 ug/kg	10	TCLP 20
Ethylbenzene	130 ug/kg	NA	-
Toluene	500 ug/kg	NA	-
Xylenes(total)	740 ug/kg	NA	-

BH - Borehole

ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
 mg/L - milligrams per liter

Table H.23  
Site Inspection Derived Waste - Drum Containing Soil Cuttings from 021-023BH & 021-024BH  
148th FG, Duluth Air National Guard Base  
Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
<b>VOC</b>			
Acetone	38 ug/kg	NA	-
Benzene	1,100 ug/kg	10	TCCLP 20
1,2-Dichloroethane	52 ug/kg	10	TCCLP 20
Ethylbenzene	110 ug/kg	NA	-
Toluene	350 ug/kg	NA	-
Xylenes(total)	370 ug/kg	NA	-
<b>SVOC</b>			
Benzo(a)Anthracene	690 ug/kg	NA	-
Benzo(k)Fluoranthene	1,200 ug/kg	NA	-
Benzo(a)Pyrene	760 ug/kg	NA	-
Benzo(g,h,i)Perylene	610 ug/kg	NA	-
Chrysene	860 ug/kg	NA	-
Fluoranthene	1,500 ug/kg	NA	-
Indeno(1,2,3-cd)Pyrene	530 ug/kg	NA	-
Phenanthrene	990 ug/kg	NA	-
Pyrene	1,500 ug/kg	NA	-
<b>TPH</b>			
TPH	190 mg/kg	NA	-
<b>Pesticides</b>			
Chlordane(technical)	47 ug/kg	0.6	TCCLP 20
<b>Metal</b>			
Aluminum	17,800 mg/kg	NA	-
Arsenic	2 mg/kg	100	TCCLP 20
Beryllium	1.0 mg/kg	NA	-
Cadmium	0.20 mg/kg	20	TCCLP 20
Chromium	29 mg/kg	100	TCCLP 20
Copper	61.6 mg/kg	NA	-
Nickel	30 mg/kg	NA	-
Lead	20 mg/kg	100	TCCLP 20
Zinc	67 mg/kg	NA	-

BH - Borehole  
ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

ug/L - micrograms per liter  
mg/L - milligrams per liter

Table H.24

Site Inspection Derived Waste - Drum Containing Soil Cuttings from 021-025BH  
 148th FG, Duluth Air National Guard Base  
 Duluth, Minnesota

Analyte	Maximum Concentration in Soil Cuttings	Action Level Concentration mg/kg	Standard Used
TPH			
	15 mg/kg	NA	-
Metal			
Aluminum	13,000 mg/kg	NA	-
Arsenic	1 mg/kg	100	TCLP 20
Beryllium	1.0 mg/kg	NA	-
Chromium	26 mg/kg	100	TCLP 20
Copper	67 mg/kg	NA	-
Nickel	31 mg/kg	NA	-
Lead	5.0 mg/kg	100	TCLP 20
Zinc	54 mg/kg	NA	-

BH - Borehole

 ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

 ug/L - micrograms per liter  
 mg/L - milligrams per liter

Table II.25

**Site Inspection Derived Waste - Drum Containing Purge Water and Development Water from 021-026MW  
148th FG, Duluth Air National Guard Base  
Duluth, Minnesota**

Analyte	Maximum Concentration in Purge Water	Action Level Concentration mg/L	Standard Used
<b>Metal</b>			
Aluminum	2.96 mg/L	NA	-
Cadmium	0.0004 mg/L	1.0	TCLP
Chromium	0.004 mg/L	1.5	TCLP
Copper	0.03 mg/L	NA	-
Nickel	0.046 mg/L	NA	-
Zinc	0.02 mg/L	NA	-

BH - Borehole

ug/kg - micrograms per kilogram

mg/kg - milligrams per kilogram

ug/L - micrograms per liter

mg/L - milligrams per liter



**APPENDIX I**  
**DATA VALIDATION**

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## **SECTION I.1 INTRODUCTION**

This appendix contains the data validation of the soil, water, and sediment samples that were taken during the Addendum 1 RCRA Facility Investigation at the Minnesota Air National Guard Base, Duluth, Minnesota. A summary of the data validation follows.

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OPERATIONAL TECHNOLOGIES  
C O R P O R A T I O N

November 21, 1994

Karen Satterfield  
Southern Petroleum Laboratories  
P.O.Box 20807  
Houston, Texas 77225  
(713) 660-0901 FAX: (713) 660-8975

Dear Karen,

The following is a brief summary of some analytical issues questioned on the Duluth Air National Guard Project in Minnesota completed in the beginning in October. Please review the following questions and feel free to contact me for any questions regarding the validation at (210) 731-0000 (ext. 188).

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Escobar". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Mark Escobar  
Project Chemist

Enclosure: As stated



**OPERATIONAL TECHNOLOGIES**  
C O R P O R A T I O N

**Questions Regarding Validation on  
Duluth Air National Guard Site Investigation  
Duluth, Minnesota 1308-101  
Southern Petroleum Laboratories, Houston Texas**

**\*General\*: Sample 017-010 BH 0.5'-1.0' (Lab ID# 9410269-01) needs to be corrected from 10/4/94 to 10/6/94 on Date Sampled listed on the Report Form.**

**Pesticide/PCB (SW 8080)**

1.     **The following samples were not provided with Raw Data/Chromatograms:**

021-RB07	Lab ID# 9410180-08
DANGB-FB01	Lab ID# 9410269-08
DANGB-FB02	Lab ID# 9410269-09

**Duluth Air National Guard Site Investigation  
Duluth, Minnesota 1308-101-S002  
Southern Petroleum Laboratories, Houston, Texas  
Data Validation Brief Summary**

**SAMPLE:**

**WATER**

**017-RB03**

Lab ID# 9407813-01

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.*
- \*Met 7 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*No hits were detected above the detection limit of 0.5 mg/L.*
- \*Raw Data/chromatogram and surrogate recovery was not provided.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-018 BH 1.5'-2'**

**Lab ID# 9407813-02**

**SVOA/SW8270 =**

**\*Hits were detected on Phenanthrene at 470 mg/kg and on Pyrene at 460 mg/kg with detection limits of 330 mg/kg.**

**\*Met 14 extraction holding time and 40 day extract holding time.**

**\*COC information verified.**

**\*Surrogates were valid and within QC Limits.**

**\*Blanks were clean of any hits above the detection limits.**

**TPH/USEPA 418.1=**

**\*Met 28 day holding time.**

**\*COC information verified.**

**\*Hit at 260 mg/kg with a detection limit of 10 mg/kg.**

**\*Raw data/Chromatogram or surrogate recovery was not provided.**

**\*Blanks were clean of any hits above the detection limits.**



**SAMPLE:**

**SOIL**

**017-018 BH 5'-5.5'**

**Lab ID# 9407813-03**

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*
- \*An initial 2x dilution was performed on this analysis.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit at 250 mg/kg was detected above the detection limit of 10 mg/kg.*
- \*Raw data/Chromatogram or surrogate recovery was not provided.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-018 BH 5.5'-6'**

**Lab ID# 9407813-04**

**SVOA/SW8270 =**

*\*No hits were detected above assigned detection limits.*

*\*Met 14 extraction holding time and 40 day extract holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

*\*An initial 5x and a secondary 20x dilution was performed due to one internal standard being outside QC limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.*

*\*COC information verified.*

*\*Hit was detected at 27 mg/kg with a detection limit of 10 mg/kg.*

*\*Raw Data/Chromatogram and surrogate recovery was not provided.*

*\*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-018 BH 9'-9.5'**

**Lab ID# 9407813-05**

**SVOA/SW8270 =**

*\*No hits were detected above assigned detection limits.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*A hit was detected at 12 mg/kg with a detection limit of 10 mg/kg.  
\*Raw Data/Chromatogram or surrogate recovery was not provided.  
\*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-019 BH 2'-2.5'**

**Lab ID# 9407813-06**

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit at 99 mg/kg with a detection limit of 10 mg/kg.*
- \*Raw Data/Chromatogram or surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-019 BH 5'-5.5'**

**Lab ID# 9407813-07**

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*No hits were above the detection limit of 10 mg/kg.*
- \*Raw Data/Chromatogram or surrogate recovery was not provided.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:****SOIL****017-019 BH 9'-9.5'****Lab ID# 9407813-08****SVOA/SW8270 =***\*No hits were detected above assigned detection limits.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***TPH/USEPA 418.1=***\*Met 28 day holding time.**\*COC information verified.**\*Hit was at 14 mg/kg with a detection limit of 10 mg/kg.**\*Raw Data/Chromatogram and surrogate recovery was not provided for.**\*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-020 BH 1.5'-2'**

**Lab ID# 9407813-09**

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit was detected at 24 mg/kg with a detection limit of 10 mg/kg.*
- \*Raw Data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-020 BH 5'-5.5'**

**Lab ID# 9407813-10**

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*
- \*An initial 5x dilution was performed on this analysis.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit was detected at 110 mg/kg with a detection limit of 10 mg/kg.*
- \*Raw Data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*



**SAMPLE:**

**SOIL**

**017-020 BH 9'-9.5'**

**Lab ID# 9407813-11**

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit was detected at 29 mg/kg with a detection limit of 10 mg/kg.*
- \*Raw Data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**WATER**

**017-RB 02**

**Lab ID# 9407703-01**

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.**
- \*Met 7 extraction holding time and 40 day extract holding time.**
- \*COC information verified.**
- \*Surrogates were valid and within QC Limits.**
- \*Blanks were clean of any hits above the detection limits.**

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.**
- \*COC information verified.**
- \*No hit was detected above the assigned detection limit of 0.5 mg/kg.**
- \*Raw Data/Chromatogram and surrogate recovery was not provided for.**
- \*Blanks were clean of any hits above the detection limits.**

**SAMPLE:**

**SOIL**

**017-014 BH 1.5'-2'**

**Lab ID# 9407703-02**

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*
- \*An initial 10x dilution was performed for this analysis.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit was detected at 3600 mg/kg with a detection limit of 10 mg/kg.*
- \*Raw Data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-014 BH 5'-5.5'**

**Lab ID# 9407703-03**

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit was detected at 350 mg/kg with a detection limit of 10 mg/kg.*
- \*Raw Data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-014 BH 5.5'-6'**

**Lab ID# 9407703-04**

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit was detected at 49 mg/kg with a detection limit of 10 mg/kg.*
- \*Raw Data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-014 BH 9'-9.5'**

**Lab ID# 9407703-05**

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit was detected at 17 mg/kg with a detection limit of 10 mg/kg.*
- \*Raw Data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-012 BH 2'-2.5'**

**Lab ID# 9407703-06**

**SVOA/SW8270 =**

**\*No hits were detected above assigned detection limits.**

**\*Met 14 extraction holding time and 40 day extract holding time.**

**\*COC information verified.**

**\*Surrogates were valid and within QC Limits.**

**\*Blanks were clean of any hits above the detection limits.**

**TPH/USEPA 418.1=**

**\*Met 28 day holding time.**

**\*COC information verified.**

**\*Hit was detected at 190 mg/kg with a detection limit of 10 mg/kg.**

**\*Raw Data/Chromatogram and surrogate recovery was not provided for.**

**\*Blanks were clean of any hits above the detection limits.**

**SAMPLE:**

**SOIL**

**017-012 BH 5'-5.5'**

**Lab ID# 9407703-07**

**SVOA/SW8270 =**

**\*No hits were detected above assigned detection limits.**

**\*Met 14 extraction holding time and 40 day extract holding time.**

**\*COC information verified.**

**\*Surrogates were valid and within QC Limits.**

**\*Blanks were clean of any hits above the detection limits.**

**TPH/USEPA 418.1=**

**\*Met 28 day holding time.**

**\*COC information verified.**

**\*Hit was detected at 13 mg/kg with a detection limit of 10 mg/kg.**

**\*Raw Data/Chromatogram and surrogate recovery was not provided for.**

**\*Blanks were clean of any hits above the detection limits.**



**SAMPLE:****SOIL****017-011 BH 1.5'-2'****Lab ID# 9407703-08****SVOA/SW8270 =**

**\*Hits were detected at 1000 ug/kg for Acenaphthalene, 2800 ug/kg for Benzo(a)Anthracene, 2900 ug/kg for Benzo(k)Fluoranthene, 3100 ug/kg for Benzo(a)Pyrene, 2000 ug/kg for Benzo(g,h,i)Perylene, 870 ug/kg for Carbazole, 3600 ug/kg for Chrysene, 450 ug/kg for Dibenzofuran, 1800 ug/kg for Ideno(1,2,3-cd)Pyrene, and 400 ug/kg for Naphthalene that all had detection limits of 330 ug/kg. Also, Fluoranthene had a hit at 5800 ug/kg, Phenanthrene and Pyrene with a hits at 4900 ug/kg and all three having detection limits of 3300 ug/kg.**

**\*Met 14 extraction holding time and 40 day extract holding time.**

**\*COC information verified.**

**\*Surrogates were valid and within QC Limits.**

**\*Blanks were clean of any hits above the detection limits.**

**\*A 10x dilution was performed on this analysis.**

**TPH/USEPA 418.1=**

**\*Met 28 day holding time.**

**\*COC information verified.**

**\*Hit was detected at 180 mg/kg with a detection limit of 10 mg/kg.**

**\*Raw data/Chromatogram and surrogate recovery was not provided for.**

**\*Blanks were clean of any hits above the detection limits.**

**SAMPLE:**

**SOIL**

**017-011 BH 5'-5.5'**

**Lab ID# 9407703-09**

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit was detected at 25 mg/kg with a detection limit of 10 mg/kg.*
- \*Raw data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:****SOIL****017-010 BH 5'-5.5'****Lab ID# 9407703-10****SVOA/SW8270 =*****\*No hits were detected above assigned detection limits.******\*Met 14 extraction holding time and 40 day extract holding time.******\*COC information verified.******\*Surrogates were valid and within QC Limits.******\*Blanks were clean of any hits above the detection limits.*****TPH/USEPA 418.1=*****\*Met 28 day holding time.******\*COC information verified.******\*Hit was detected at 25 mg/kg with a detection limit of 10 mg/kg.******\*Raw data/Chromatogram and surrogate recovery was not provided for.******\*Blanks were clean of any hits above the detection limits.***

**SAMPLE:**

**SOIL**

**017-010 BH 5.5'-6'**

**Lab ID# 9407703-11**

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.**
- \*Met 14 extraction holding time and 40 day extract holding time.**
- \*COC information verified.**
- \*Surrogates were valid and within QC Limits.**
- \*Blanks were clean of any hits above the detection limits.**

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.**
- \*COC information verified.**
- \*Hit was detected at 22 mg/kg with a detection limit of 10 mg/kg.**
- \*Raw Data/Chromatogram and surrogate recovery was not provided for.**
- \*Blanks were clean of any hits above the detection limits.**

**SAMPLE:****SOIL****017-010 BH 9'-9.5'****Lab ID# 9407703-12****SVOA/SW8270 =*****\*No hits were detected above assigned detection limits.******\*Met 14 extraction holding time and 40 day extract holding time.******\*COC information verified.******\*Surrogates were valid and within QC Limits.******\*Blanks were clean of any hits above the detection limits.*****TPH/USEPA 418.1=*****\*Met 28 day holding time.******\*COC information verified.******\*No hit was detected at the detection limit of 10 mg/kg.******\*Raw data/chromatogram and surrogate recovery was not provided for.******\*Blanks were clean of any hits above the detection limits.***

**SAMPLE:**

**SOIL**

**017-017 BH 2'-2.5'**

**Lab ID# 9407703-13**

**SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.**
- \*Met 14 extraction holding time and 40 day extract holding time.**
- \*COC information verified.**
- \*Surrogates were valid and within QC Limits.**
- \*Blanks were clean of any hits above the detection limits.**

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.**
- \*COC information verified.**
- \*Hit was detected at 140 mg/kg with a detection limit of 10 mg/kg.**
- \*Raw data/Chromatogram and surrogate recovery was not provided for.**
- \*Blanks were clean of any hits above the detection limits.**

**SAMPLE:**

**SOIL**

**017-017 BH 5'-5.5'**

**Lab ID# 9407703-14**

**SVOA/SW8270 =**

*\*Hit was detected on Bis(2-ethylhexyl)phthalate at 820 mg/kg with a detection limit of 330 ug/kg.*

*\*Met 14 extraction holding time and 40 day extract holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.*

*\*COC information verified.*

*\*Hit was detected at 210 mg/kg with a detection limit of 10 mg/kg.*

*\*Raw data/Chromatogram and surrogate recovery was not provided for.*

*\*Blanks were clean of any hits above the detection limits.*

**SAMPLE:****SOIL****017-017 BH 9'-9.5'****Lab ID# 9407703-15****SVOA/SW8270 =**

- \*No hits were detected above assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit was detected at 110 mg/kg with a detection limit of 10 mg/kg.*
- \*Raw data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*



**SAMPLE:****SOIL****021-017 BH 1.5'-2'****Lab ID# 9407612-01****VOA/SW8240 =**

- \*No hits were detected above the assigned detection limits.*
- \*All met 14 day holding time.*
- \*COC information verified.*
- \*All surrogate recoveries were within QC limits.*
- \*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

- \*No hits were detected above the assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*Clean, No hits above the detection limits assigned.*

- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit at 86 mg/kg with detection limit of 10 mg/kg.*
- \*Raw data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

- \*The Elements that were not detected above the detection limit were Ag, As, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.*
- \*All met 6 month holding times.*
- \*COC information verified.*

**SAMPLE:****SOIL****021-017 BH 6'-6.5'****Lab ID# 9407612-02****VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*Clean, No hits above the detection limits assigned.*

*\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*Hit at 14 mg/kg with detection limit of 10 mg/kg.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:****SOIL****021-017 BH 6.5'-7'****Lab ID# 9407612-03****VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*Clean, No hits above the detection limits assigned.*

*\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*No hit detected above the detection limit of 10 mg/kg.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:****SOIL****021-017 BH 14'-14.5'****Lab ID# 9407612-04****VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 = \*Clean, No hits above the detection limits assigned.**

*\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*Hit at 22 mg/kg with a detection limit of 10 mg/kg.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, As, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:****WATER****021-RB 03****Lab ID# 9407612-05****VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.  
\*All met 7 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 7 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*Clean, No hits above the detection limits assigned.*

*\*Met 7 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.  
\*Raw data/Chromatograms were not provided for.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*No hit above the detection limit of 0.5 mg/L.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, Al, As, Be, Cd, Cr, Hg, Pb, Sb, Se, and Tl. Other elements were detected above the stated detection limits.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:**

**WATER**

**021-TB 03**

**Lab ID# 9407612-05**

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.*

*\*All met 7 day holding time.*

*\*COC information verified.*

*\*All surrogate recoveries were within QC limits.*

*\*Blanks were clean and no compounds were detected above the detection limits.*

**SAMPLE:**

**WATER**

**021-026MW-GW02**

**Lab ID# 9407971-01**

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.*

*\*All met 7 day holding time.*

*\*COC information verified.*

*\*All surrogate recoveries were within QC limits.*

*\*Blanks were clean and no compounds were detected above the detection limits.*

**METALS**

**SW6010/7000=**

*\*The Elements that were not detected above the detection limit were As, Be, Hg, Pb, Sb, Se, and Tl. Other elements were detected above the stated detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

**SAMPLE:****WATER****021-RB05****Lab ID# 9407971-02****VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.  
\*All met 7 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 7 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*Clean, No hits above the detection limits assigned.*

*\*Met 7 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.  
\*Raw data/Chromatograms were not provided for.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*No hit above the detection limit of 0.5 mg/L.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Al, As, Be, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, and Tl. Other elements were detected above the stated detection limits.  
\*All met 6 month holding times.  
\*COC information verified.*



**SAMPLE:**

**WATER**

**018-FB01**

**Lab ID# 9407971-03**

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.*

*\*All met 7 day holding time.*

*\*COC information verified.*

*\*All surrogate recoveries were within QC limits.*

*\*Blanks were clean and no compounds were detected above the detection limits.*

**SAMPLE:**

**WATER**

**018-RB01**

**Lab ID# 9407971-04**

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.*

*\*All met 7 day holding time.*

*\*COC information verified.*

*\*All surrogate recoveries were within QC limits.*

*\*Blanks were clean and no compounds were detected above the detection limits.*

**SAMPLE:**

**WATER**

**018-TB01**

**Lab ID# 9407971-05**

**VOA/SW8240 =**

***\*No hits were detected above the assigned detection limits.***

***\*All met 7 day holding time.***

***\*COC information verified.***

***\*All surrogate recoveries were within QC limits.***

***\*Blanks were clean and no compounds were detected above the detection limits.***

**SAMPLE:**

**WATER**

**017-FB01**

**Lab ID# 9407971-06**

**SVOA/SW8270 =**

**\*No hits were detected above the assigned detection limits.  
\*Met 7 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.**

**TPH/USEPA 418.1=**

**\*Met 28 day holding time.  
\*COC information verified.  
\*No hit above the detection limit of 0.5 mg/L.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.**

**SAMPLE:****SOIL****017-13 BH 1.5'-2'****Lab ID# 9407680-01****SVOA/SW8270 =**

**\*Hits on Benzo(b)Fluoroanthene at 420 ug/kg, Chrysene at 370 ug/kg, Fluoranthene at 590 ug/kg, Phenanthrene at 390 ug/kg, and Pyrene at 640 ug/kg with detection limits of 330 ug/kg.**

**\*Met 14 extraction holding time and 40 day extract holding time.**

**\*COC information verified.**

**\*Surrogates were valid and within QC Limits.**

**\*Blanks were clean of any hits above the detection limits.**

**TPH/USEPA 418.1=**

**\*Met 28 day holding time.**

**\*COC information verified.**

**\*Hit at 275 mg/kg with the detection limit of 10 mg/kg.**

**\*Raw data/Chromatogram and surrogate recovery was not provided for.**

**\*Blanks were clean of any hits above the detection limits.**

**SAMPLE:**

**SOIL**

**017-13 BH 5'-5.5'**

**Lab ID# 9407680-02**

**SVOA/SW8270 =**

- \*No hits were detected above the assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit at 370 mg/kg with the detection limit of 10 mg/kg.*
- \*Raw data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-13 BH 9'-9.5'**

**Lab ID# 9407680-03**

**SVOA/SW8270 =**

**\*Hit on Di-n-butyl phthalate was detected at 430 ug/kg with a detection limit of 330 ug/kg.**

**\*Met 14 extraction holding time and 40 day extract holding time.**

**\*COC information verified.**

**\*Surrogates were valid and within QC Limits.**

**\*Blanks were clean of any hits above the detection limits.**

**TPH/USEPA 418.1=**

**\*Met 28 day holding time.**

**\*COC information verified.**

**\*Hit at 34 mg/kg with the detection limit of 10 mg/kg.**

**\*Raw data/Chromatogram and surrogate recovery was not provided for.**

**\*Blanks were clean of any hits above the detection limits.**

**SAMPLE:**

**SOIL**

**017-15 BH 2'-2.5'**

**Lab ID# 9407680-04**

**SVOA/SW8270 =**

- \*No hits were detected above the assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*
- \*A 2x dilution was performed on this analysis.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit at 300 mg/kg with the detection limit of 10 mg/kg.*
- \*Raw data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*



**SAMPLE:****SOIL****017-15 BH 5.5'-6'****Lab ID# 9407680-05****SVOA/SW8270 =**

- \*No hits were detected above the assigned detection limits.**
- \*Met 14 extraction holding time and 40 day extract holding time.**
- \*COC information verified.**
- \*Surrogates were valid and within QC Limits.**
- \*Blanks were clean of any hits above the detection limits.**
- \*A 2x dilution was performed on this analysis.**

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.**
- \*COC information verified.**
- \*Hit at 110 mg/kg with the detection limit of 10 mg/kg.**
- \*Raw data/Chromatogram and surrogate recovery was not provided for.**
- \*Blanks were clean of any hits above the detection limits.**

**SAMPLE:**

**SOIL**

**017-15 BH 9.5'10'**

**Lab ID# 9407680-06**

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.  
\*A 2x dilution was performed on this analysis.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*Hit at 22 mg/kg with the detection limit of 10 mg/kg.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**SAMPLE:****SOIL****017-16 BH 1.5'-2'****Lab ID# 9407680-07****SVOA/SW8270 =*****\*No hits were detected above the assigned detection limits.******\*Met 14 extraction holding time and 40 day extract holding time.******\*COC information verified.******\*Surrogates were valid and within QC Limits.******\*Blanks were clean of any hits above the detection limits.******\*A 5x dilution was performed on this analysis.*****TPH/USEPA 418.1=*****\*Met 28 day holding time.******\*COC information verified.******\*Hit at 7700 mg/kg with the detection limit of 200 mg/kg. A 20x dilution was performed.******\*Raw data/Chromatogram and surrogate recovery was not provided for.******\*Blanks were clean of any hits above the detection limits.***

**SAMPLE:****SOIL****017-16 BH 5.0'-5.5'****Lab ID# 9407680-08****SVOA/SW8270 =**

- \*No hits were detected above the assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit at 270 mg/kg with the detection limit of 10 mg/kg.*
- \*Raw data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-16 BH 9'-9.5'**

**Lab ID# 9407680-09**

**SVOA/SW8270 =**

- \*No hits were detected above the assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit at 22 mg/kg with the detection limit of 10 mg/kg.*
- \*Raw data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-13 BH 9'-9.5' MS**

**Lab ID# 9407680-10**

**SVOA/SW8270 =**

- \*All spiked compounds were detected.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were not within QC Limits due to matrix interference.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Spiked compound hit at 430 mg/kg with the detection limit of 10 mg/kg.*
- \*Raw data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**017-13 BH 9'-9.5' MSD    Lab ID# 9407680-11**

**SVOA/SW8270 =**

- \*All spiked compounds were detected.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were not within QC Limits due to matrix interference. 8 out of 11 RPD's were out of QC limits due to matrix interference.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Spiked compound hit at 430 mg/kg with the detection limit of 10 mg/kg. RPD within QC Criteria.*
- \*Raw data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**WATER**

**017-RB 01**

**Lab ID# 9407680-12**

**SVOA/SW8270 =**

- \*No hits were detected above the assigned detection limits.*
- \*Met 7 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*No hit was detected above the detection limit of 0.5 mg/l.*
- \*Raw data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*



**SAMPLE:****SOIL****021-022 BH 14'-14.5'****Lab ID# 9407405-03****VOA/SW8240 =****\*Hits on Benzene at 79 ug/kg, Toluene at 6 ug/kg, and Total Xylenes at 18 mg/kg.****\*All met 14 day holding time.****\*COC information verified.****\*All surrogate recoveries were within QC limits.****\*Blanks were clean and no compounds were detected above the detection limits.****\*No Raw data/Chromatograms were provided for validation.****SVOA/SW8270 =****\*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****\*No Raw data/Chromatograms were provided for validation.****PEST/SW8080 = \*No hits above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****TPH/USEPA 418.1=****\*Met 28 day holding time.****\*COC information verified.****\*No hit above the detection limit of 10 mg/kg.****\*Raw data/Chromatogram and surrogate recovery was not provided for.****\*Blanks were clean of any hits above the detection limits.****METALS****SW6010/7000=****\*The Elements that were not detected above the detection limit were Ag, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.****\*All met 6 month holding times.****\*COC information verified.**

**SAMPLE:****SOIL****021-023 BH 1.5'-2'****Lab ID# 9407405-04****VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.  
\*No Raw data/Chromatograms were provided for validation.*

**SVOA/SW8270 =**

*\*Hits on Benzo(a)Anthracene at 690 ug/kg, Benzo(k)Fluoroanthene at 1200 ug/kg, Benzo(a)Pyrene at 760 ug/kg, Benzo(g,h,i)Perylene at 610 ug/kg, Chrysene at 860 ug/kg, Fluoranthene at 1500 ug/kg, Ideno(1,2,3-cd)Pyrene at 530 ug/kg, Phenanthrene at 990 ug/kg, and Pyrene at 1500 ug/kg.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.  
\*No Raw data/Chromatograms were provided for validation.*

**PEST/SW8080 =** *\*Hit on Chlordane at 47 ug/kg with the detection limit of 8.5 ug/kg.*

*\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*Hit at 190 mg/kg with a detection limit of 10 mg/kg.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, As, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:****SOIL****021-023 BH 11'-11.5'****Lab ID# 9407405-05****VOA/SW8240 =**

*\*Hit on Benzene at 170 ug/kg with the detection limit of 25 ug/kg. The report shows hits on Acetone at 38 ug/kg, 1,2-Dichloroethene at 33 ug/kg, Ethylbenzene at 9 ug/kg, Toluene at 33 ug/kg, and Total xylenes at 33 ug/kg but the quantitative report on the raw data shows no such hits?*

*\*All met 14 day holding time.*

*\*COC information verified.*

*\*All surrogate recoveries were within QC limits.*

*\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.*

*\*Met 14 extraction holding time and 40 day extract holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*Hit on Chlordane at 47 ug/kg with the detection limit of 8.5 ug/kg.*

*\*Met 14 extraction holding time and 40 day extract holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.*

*\*COC information verified.*

*\*No hit was detected above the detection limit of 10 mg/kg.*

*\*Raw data/Chromatogram and surrogate recovery was not provided for.*

*\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

**SAMPLE:****SOIL****021-023 BH 11.5'-12'****Lab ID# 9407405-06****VOA/SW8240 =****\*Hit on Benzene at 630 ug/kg and 1,2-Dichloroethane at 39 ug/kg.****\*All met 14 day holding time.****\*COC information verified.****\*All surrogate recoveries were within QC limits.****\*Blanks were clean and no compounds were detected above the detection limits.****SVOA/SW8270 =****\*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****PEST/SW8080 = \*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****TPH/USEPA 418.1=****\*Met 28 day holding time.****\*COC information verified.****\*Hit at 12 ug/kg was detected above the detection limit of 10 mg/kg.****\*Raw data/Chromatogram and surrogate recovery was not provided for.****\*Blanks were clean of any hits above the detection limits.****METALS****SW6010/7000=****\*The Elements that were not detected above the detection limit were Ag, As, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.****\*All met 6 month holding times.****\*COC information verified.**

**SAMPLE:****SOIL****021-023 BH 14'-14.5'****Lab ID# 9407405-07****VOA/SW8240 =**

*\*Hit on Benzene at 1100 ug/kg, 1,2-Dichloroethane at 52 ug/kg, Ethylbenzene at 110 ug/kg, Toluene at 350 ug/kg, and Total Xylenes at 370 ug/kg.*

*\*All met 14 day holding time.*

*\*COC information verified.*

*\*All surrogate recoveries were within QC limits.*

*\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.*

*\*Met 14 extraction holding time and 40 day extract holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 14 extraction holding time and 40 day extract holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.*

*\*COC information verified.*

*\*Hit at 18 ug/kg was detected above the detection limit of 10 mg/kg.*

*\*Raw data/Chromatogram and surrogate recovery was not provided for.*

*\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

**SAMPLE:****SOIL****021-025 BH 1.5'-2'****Lab ID# 9407405-08****VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*Hit at 15 ug/kg was detected above the detection limit of 10 mg/kg.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:****SOIL****021-025 BH 10'-10.5'****Lab ID# 9407405-09****VOA/SW8240 =***\*No hits were detected above the assigned detection limits.**\*All met 14 day holding time.**\*COC information verified.**\*All surrogate recoveries were within QC limits.**\*Blanks were clean and no compounds were detected above the detection limits.***SVOA/SW8270 =***\*No hits were detected above the assigned detection limits.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***TPH/USEPA 418.1=***\*Met 28 day holding time.**\*COC information verified.**\*Hit at 15 ug/kg was detected above the detection limit of 10 mg/kg.**\*Raw data/Chromatogram and surrogate recovery was not provided for.**\*Blanks were clean of any hits above the detection limits.***METALS****SW6010/7000=***\*The Elements that were not detected above the detection limit were Ag, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.**\*All met 6 month holding times.**\*COC information verified.*

**SAMPLE:****SOIL****021-025 BH 14'-14.5'****Lab ID# 9407405-10****VOA/SW8240 =****\*No hits were detected above the assigned detection limits.****\*All met 14 day holding time.****\*COC information verified.****\*All surrogate recoveries were within QC limits.****\*Blanks were clean and no compounds were detected above the detection limits.****SVOA/SW8270 =****\*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****PEST/SW8080 = \*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****TPH/USEPA 418.1=****\*Met 28 day holding time.****\*COC information verified.****\*Hit at 15 ug/kg was detected above the detection limit of 10 mg/kg.****\*Raw data/Chromatogram and surrogate recovery was not provided for.****\*Blanks were clean of any hits above the detection limits.****METALS****SW6010/7000=****\*The Elements that were not detected above the detection limit were Ag, As, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.****\*All met 6 month holding times.****\*COC information verified.**



**SAMPLE:**

**SOIL**

**021-025BH 14'-14.5'MS Lab ID# 9407405-11**

**VOA/SW8240 =**

- \*All spiked compounds were detected within spiked amounts.*
- \*All met 14 day holding time.*
- \*COC information verified.*
- \*All surrogate recoveries were within QC limits.*
- \*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

- \*All spiked compounds were detected within spiked amounts.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*All spiked compounds were recovered within spiked amounts.*

- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Spiked compound recovered at 420 ug/kg.*
- \*Raw data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**METALS**

**SW6010/7000=**

- \*Antimony was the only element that was not recovered within Spiked amount recovery.*
- \*All met 6 month holding times.*
- \*COC information verified.*

**SAMPLE:**

**SOIL**

**021-025BH 14'-14.5'MSD Lab ID# 9407443-12**

**VOA/SW8240 =**      *\*All spiked compounds were detected within spiked amounts. All RPD's were within QC Criteria.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**      *\*All spiked compounds were detected within spiked amounts. All RPD's were within QC Criteria.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*All spiked compounds were recovered within spiked amounts. All RPD's were within QC Criteria.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**      *\*Met 28 day holding time.  
\*COC information verified.  
\*Spiked compound recovered at 410 ug/kg. RPD was within QC Limits.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS**

**SW6010/7000=**      *\*All spiked elements were recovered within spiked amounts. RPD's were within QC Criteria.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:**

**WATER**

**021-TB1**

**Lab ID# 9407443-13**

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.*

*\*All met 14 day holding time.*

*\*COC information verified.*

*\*All surrogate recoveries were within QC limits.*

*\*Blanks were clean and no compounds were detected above the detection limits.*

**SAMPLE:****SOIL****021-015 BH 1.5'-2'****Lab ID# 9407566-01****VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*Hit at 16 ug/kg was detected above the detection limit of 10 mg/kg.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:****SOIL****021-015 BH 6'-6.5'****Lab ID# 9407566-02****VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*Hit at 15 ug/kg was detected above the detection limit of 10 mg/kg.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:****SOIL****021-016 BH 1.5'-2'****Lab ID# 9407566-03****VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*Hit at 67 ug/kg was detected above the detection limit of 10 mg/kg.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, As, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:****SOIL****021-016 BH 6'-6.5'****Lab ID# 9407566-04****VOA/SW8240 =**

- \*Hit on Acetone at 13 ug/kg with the detection limit of 10 ug/kg.*
- \*All met 14 day holding time.*
- \*COC information verified.*
- \*All surrogate recoveries were within QC limits.*
- \*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

- \*No hits were detected above the assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*No hit was detected above the detection limit of 10 mg/kg.*
- \*Raw data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

- \*The Elements that were not detected above the detection limit were Ag, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.*
- \*All met 6 month holding times.*
- \*COC information verified.*

**SAMPLE:****SOIL****021-018 BH 1.5'-2'****Lab ID# 9407566-05****VOA/SW8240 =***\*No hit was detected above the assigned detection limits.**\*All met 14 day holding time.**\*COC information verified.**\*All surrogate recoveries were within QC limits.**\*Blanks were clean and no compounds were detected above the detection limits.***SVOA/SW8270 =***\*Hits on Acenaphthene at 1000 ug/kg, Anthracene at 1900 ug/kg, Benzo(a)Anthracene at 6400 ug/kg, Benzo(b)Fluoranthene at 9300 ug/kg, Benzo(k)fluorathene at 4800 ug/kg, Benzo(a)Pyrene at 5500 ug/kg, Benzo(g,h,i)Perylene at 3500 ug/kg, Carbazole at 1500 ug/kg, Chrysene at 7000 ug/kg, Fluorathene at 14000 ug/kg, Fluorene at 920 ug/kg, Indeno(1,2,3-cd)pyrene at 3900 ug/kg, Phenanthrene at 8800 ug/kg, Pyrene at 12000 ug/kg.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.**\*An initial dilution of 2x was performed along with a continuing dilution of 10x due to matrix interference.***PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***TPH/USEPA 418.1=***\*Met 28 day holding time.**\*COC information verified.**\*Hit was detected at 125 mg/kg with a detection limit of 10 mg/kg.**\*Raw data/Chromatogram and surrogate recovery was not provided for.**\*Blanks were clean of any hits above the detection limits.***METALS****SW6010/7000=***\*The Elements that were not detected above the detection limit were Ag, As, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.**\*All met 6 month holding times.**\*COC information verified.*



**SAMPLE:****SOIL****021-018 BH 10'-10.5'****Lab ID# 9407566-06****VOA/SW8240 =***\*No hit was detected above the assigned detection limits.**\*All met 14 day holding time.**\*COC information verified.**\*All surrogate recoveries were within QC limits.**\*Blanks were clean and no compounds were detected above the detection limits.***SVOA/SW8270 =***\*No hits were detected above the assigned detection limits.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***TPH/USEPA 418.1=***\*Met 28 day holding time.**\*COC information verified.**\*Hit detected at 15 mg/kg that was above the detection limit of 10 mg/kg.**\*Raw data/Chromatogram and surrogate recovery was not provided for.**\*Blanks were clean of any hits above the detection limits.***METALS****SW6010/7000=***\*The Elements that were not detected above the detection limit were Ag, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.**\*All met 6 month holding times.**\*COC information verified.*

**SAMPLE:****SOIL****021-018 BH 14'-14.5'****Lab ID# 9407566-07****VOA/SW8240 =***\*No hit was detected above the assigned detection limits.**\*All met 14 day holding time.**\*COC information verified.**\*All surrogate recoveries were within QC limits.**\*Blanks were clean and no compounds were detected above the detection limits.***SVOA/SW8270 =***\*No hits were detected above the assigned detection limits.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***TPH/USEPA 418.1=***\*Met 28 day holding time.**\*COC information verified.**\*Hit detected at 28 mg/kg that was above the detection limit of 10 mg/kg.**\*Raw data/Chromatogram and surrogate recovery was not provided for.**\*Blanks were clean of any hits above the detection limits.***METALS****SW6010/7000=***\*The Elements that were not detected above the detection limit were Ag, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.**\*All met 6 month holding times.**\*COC information verified.*

**SAMPLE:****SOIL****021-018 BH 14.5'-15'****Lab ID# 9407566-08****VOA/SW8240 =**

*\*No hit was detected above the assigned detection limits.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*Hit detected at 13 mg/kg that was above the detection limit of 10 mg/kg.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, As, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:**

**SOIL**

**021-019 BH 1.0'-1.5'      Lab ID# 9407566-09**

**\*Sample ID need to be corrected to read COC.**

**VOA/SW8240 =**

**\*No hit was detected above the assigned detection limits.**

**\*All met 14 day holding time.**

**\*COC information verified.**

**\*All surrogate recoveries were within QC limits.**

**\*Blanks were clean and no compounds were detected above the detection limits.**

**SVOA/SW8270 =**

**\*No hits were detected above the assigned detection limits.**

**\*Met 14 extraction holding time and 40 day extract holding time.**

**\*COC information verified.**

**\*Surrogates were valid and within QC Limits.**

**\*Blanks were clean of any hits above the detection limits.**

**PEST/SW8080 = \*No hits were detected above the assigned detection limits.**

**\*Met 14 extraction holding time and 40 day extract holding time.**

**\*COC information verified.**

**\*Surrogates were valid and within QC Limits.**

**\*Blanks were clean of any hits above the detection limits.**

**TPH/USEPA 418.1=**

**\*Met 28 day holding time.**

**\*COC information verified.**

**\*Hit detected at 25 mg/kg that was above the detection limit of 10 mg/kg.**

**\*Raw data/Chromatogram and surrogate recovery was not provided for.**

**\*Blanks were clean of any hits above the detection limits.**

**METALS**

**SW6010/7000=**

**\*The Elements that were not detected above the detection limit were Ag, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.**

**\*All met 6 month holding times.**

**\*COC information verified.**

**SAMPLE:****SOIL****021-019 BH 6'-6.5'****Lab ID# 9407566-10****VOA/SW8240 =**

*\*No hit was detected above the assigned detection limits.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*Hit detected at 30 mg/kg that was above the detection limit of 10 mg/kg.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:****SOIL****021-019 BH 10'-10.5'****Lab ID# 9407566-11****VOA/SW8240 =****\*Hit on Benzene at 17 ug/kg with a detection limit of 5 ug/kg.****\*All met 14 day holding time.****\*COC information verified.****\*All surrogate recoveries were within QC limits.****\*Blanks were clean and no compounds were detected above the detection limits.****SVOA/SW8270 =****\*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****PEST/SW8080 = \*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****TPH/USEPA 418.1=****\*Met 28 day holding time.****\*COC information verified.****\*Hit detected at 20 mg/kg that was above the detection limit of 10 mg/kg.****\*Raw data/Chromatogram and surrogate recovery was not provided for.****\*Blanks were clean of any hits above the detection limits.****METALS****SW6010/7000=****\*The Elements that were not detected above the detection limit were Ag, As, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.****\*All met 6 month holding times.****\*COC information verified.**

**SAMPLE:****SOIL****021-019 BH 14'-14.5'****Lab ID# 9407567-12****VOA/SW8240 =***\*Hit on Benzene at 8 ug/kg with a detection limit of 5 ug/kg.**\*All met 14 day holding time.**\*COC information verified.**\*All surrogate recoveries were within QC limits.**\*Blanks were clean and no compounds were detected above the detection limits.***SVOA/SW8270 =***\*No hits were detected above the assigned detection limits.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***TPH/USEPA 418.1=***\*Met 28 day holding time.**\*COC information verified.**\*Hit detected at 22 mg/kg that was above the detection limit of 10 mg/kg.**\*Raw data/Chromatogram and surrogate recovery was not provided for.**\*Blanks were clean of any hits above the detection limits.***METALS****SW6010/7000=***\*The Elements that were not detected above the detection limit were Ag, As, Be, Cd, Hg, Sb, Se, and Tl. Other elements were detected above the stated detection limits.**\*All met 6 month holding times.**\*COC information verified.*

**SAMPLE:****WATER****021-RB 02****Lab ID# 9407567-13****VOA/SW8240 =**

- \*No hits were detected above the assigned detection limits.*
- \*All met 7 day holding time.*
- \*COC information verified.*
- \*All surrogate recoveries were within QC limits.*
- \*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

- \*No hits were detected above the assigned detection limits.*
- \*Met 7 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

- \*Met 7 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*
- \*No Raw data/Chromatograms were included in the package for review.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*No hit was detected above the detection limit of 0.5 mg/L.*
- \*Raw data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

- \*The Elements that were not detected above the detection limit were Ag, As, Be, Cd, Hg, Ni, Pb, Sb, and Tl. Other elements were detected above the stated detection limits. Missing Se analysis for this sample; it was not reported on the report form.*
- \*All met 6 month holding times.*
- \*COC information verified.*



**SAMPLE:**

**WATER**

**021-TB 03**

Lab ID# 9407567-14

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.*

*\*All met 7 day holding time.*

*\*COC information verified.*

*\*All surrogate recoveries were within QC limits.*

*\*Blanks were clean and no compounds were detected above the detection limits.*

**SAMPLE:**

**SOIL**

**021-018BH 10'-10.5'MS Lab ID# 9407567-15**

**VOA/SW8240 =**      *\*All spiked compounds were detected within spiked amounts. Acetone was detected at 11 ug/kg with the detection limit of 10 ug/kg.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**      *\*All spiked compounds were detected within spiked amounts.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*All spiked compounds were recovered within spiked amounts.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**      *\*Met 28 day holding time.  
\*COC information verified.  
\*Spiked compound recovered at 15 ug/kg.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS**

**SW6010/7000=**      *\*Thallium was the only element that was not recovered within Spiked amount recovery.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:**

**SOIL**

**021-018BH 10'-10.5'MSD Lab ID# 9407567-16**

**VOA/SW8240 =**      *\*All spiked compounds were detected within spiked amounts. All RPD's were within QC Criteria.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**      *\*All spiked compounds were detected within spiked amounts. All RPD's were within QC Criteria.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*All spiked compounds were recovered within spiked amounts. All RPD's were within QC Criteria.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**      *\*Met 28 day holding time.  
\*COC information verified.  
\*Spiked compound recovered at 15 ug/kg. RPD was within QC Limits.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS**  
**SW6010/7000=**      *\*Thallium was the only element that was not recovered. RPD's were within QC Criteria.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:**

**WATER**

**021-RB 01**

**Lab ID# 9407473-01**

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.  
\*All met 7 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 7 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 7 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.  
\*No Raw data/Chromatograms were included in the package for review.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*No hit was detected above the detection limit of 0.5 mg/L.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS**

**SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, Al, As, Be, Cr, Cu, Cd, Hg, Ni, Pb, Se, Sb, and Tl. Zn is the other element that was detected above the stated detection limits.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:**

**WATER**

**021-TB 02**

**Lab ID# 9407473-02**

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.*

*\*All met 7 day holding time.*

*\*COC information verified.*

*\*All surrogate recoveries were within QC limits.*

*\*Blanks were clean and no compounds were detected above the detection limits.*

**SAMPLE:****SOIL****021-021 BH 1.5'-2'****Lab ID# 9407473-03****VOA/SW8240 =****\*No hits above the assigned detection limits.****\*All met 14 day holding time.****\*COC information verified.****\*All surrogate recoveries were within QC limits.****\*Blanks were clean and no compounds were detected above the detection limits.****SVOA/SW8270 =****\*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****PEST/SW8080 = \*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****TPH/USEPA 418.1=****\*Met 28 day holding time.****\*COC information verified.****\*Hit detected at 140 mg/kg that was above the detection limit of 10 mg/kg.****\*Raw data/Chromatogram and surrogate recovery was not provided for.****\*Blanks were clean of any hits above the detection limits.****METALS****SW6010/7000=****\*The Elements that were not detected above the detection limit were Ag, Be, Sb, Se, and Tl. Other elements were detected above the stated detection limits. Hg reported value was a date and not a result. Please correct.****\*All met 6 month holding times.****\*COC information verified.**

**SAMPLE:****SOIL**

**021-021 BH 11'-11.5'**      Lab ID# 9407473-04

**VOA/SW8240 =**      *\*No hits above the assigned detection limits.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**      *\*No hits were detected above the assigned detection limits.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**      *\*Met 28 day holding time.  
\*COC information verified.  
\*Hit detected at 21 mg/kg that was above the detection limit of 10 mg/kg.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS**

**SW6010/7000=**      *\*The Elements that were not detected above the detection limit were Ag, Be, Sb, Se, and Tl. Other elements were detected above the stated detection limits. Hg reported value was a date and not a result. Please correct.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:****SOIL****021-021 BH 14'-14.5'****Lab ID# 9407473-05****VOA/SW8240 =***\*Hits on Benzene at 47 ug/kg, Ethylbenzene at 8 ug/kg, Toluene at 19 ug/kg, and Total Xylenes at 34 ug/kg.**\*All met 14 day holding time.**\*COC information verified.**\*All surrogate recoveries were within QC limits.**\*Blanks were clean and no compounds were detected above the detection limits.***SVOA/SW8270 =***\*No hits were detected above the assigned detection limits.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***TPH/USEPA 418.1=***\*Met 28 day holding time.**\*COC information verified.**\*Hit detected at 10 mg/kg that was above the detection limit of 10 mg/kg.**\*Raw data/Chromatogram and surrogate recovery was not provided for.**\*Blanks were clean of any hits above the detection limits.***METALS****SW6010/7000=***\*The Elements that were not detected above the detection limit were Ag, Be, Sb, Se, and Tl. Other elements were detected above the stated detection limits. Hg reported value was a date and not a result. Please correct.**\*All met 6 month holding times.**\*COC information verified.*



**SAMPLE:****SOIL****021-024 BH 1.5'-2'****Lab ID# 9407473-06****VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.  
\*All met 14 day holding time.  
\*COC information verified.  
\*All surrogate recoveries were within QC limits.  
\*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 14 extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*Hit detected at 14 mg/kg that was above the detection limit of 10 mg/kg.  
\*Raw data/Chromatogram and surrogate recovery was not provided for.  
\*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

*\*The Elements that were not detected above the detection limit were Ag, Be, Sb, Se, and Tl. Other elements were detected above the stated detection limits. Hg reported value was a date and not a result. Please correct.  
\*All met 6 month holding times.  
\*COC information verified.*

**SAMPLE:****SOIL****021-024 BH 10'-10.5'****Lab ID# 9407473-07****VOA/SW8240 =****\*Hit on Benzene at 640 ug/kg, Ethylbenzene at 21 ug/kg, and Toluene at 8 ug/kg.****\*All met 14 day holding time.****\*COC information verified.****\*All surrogate recoveries were within QC limits.****\*Blanks were clean and no compounds were detected above the detection limits.****SVOA/SW8270 =****\*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****PEST/SW8080 = \*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****TPH/USEPA 418.1=****\*Met 28 day holding time.****\*COC information verified.****\*Hit detected at 18 mg/kg that was above the detection limit of 10 mg/kg.****\*Raw data/Chromatogram and surrogate recovery was not provided for.****\*Blanks were clean of any hits above the detection limits.****METALS****SW6010/7000=****\*The Elements that were not detected above the detection limit were Ag, As, Be, Sb, Se, and Tl. Other elements were detected above the stated detection limits. Hg reported value was a date and not a result. Please correct.****\*All met 6 month holding times.****\*COC information verified.**

**SAMPLE:****SOIL****021-024 BH 16'-16.5'**

Lab ID# 9407473-08

VOA/SW8240 =

*\*Hit on Benzene at 330 ug/kg, 1,2-Dichloroethane at 7 ug/kg, and Ethylbenzene 61 ug/kg.**\*All met 14 day holding time.**\*COC information verified.**\*All surrogate recoveries were within QC limits.**\*Blanks were clean and no compounds were detected above the detection limits.*

SVOA/SW8270 =

*\*No hits were detected above the assigned detection limits.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.*PEST/SW8080 = *\*No hits were detected above the assigned detection limits.**\*Met 14 extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.*

TPH/USEPA 418.1=

*\*Met 28 day holding time.**\*COC information verified.**\*No hit was detected above the detection limit of 10 mg/kg.**\*Raw data/Chromatogram and surrogate recovery was not provided for.**\*Blanks were clean of any hits above the detection limits.***METALS**

SW6010/7000=

*\*The Elements that were not detected above the detection limit were Ag, As, Be, Sb, Se, and Tl. Other elements were detected above the stated detection limits. Hg reported value was a date and not a result. Please correct.**\*All met 6 month holding times.**\*COC information verified.*

**SAMPLE:****SOIL****021-020 BH 1.5'-2'****Lab ID# 9407473-09****VOA/SW8240 =****\*No hits above the assigned detection limits.****\*All met 14 day holding time.****\*COC information verified.****\*All surrogate recoveries were within QC limits.****\*Blanks were clean and no compounds were detected above the detection limits.****SVOA/SW8270 =****\*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****PEST/SW8080 = \*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****TPH/USEPA 418.1=****\*Met 28 day holding time.****\*COC information verified.****\*Hit was detected at 13 mg/kg with the detection limit of 10 mg/kg.****\*Raw data/Chromatogram and surrogate recovery was not provided for.****\*Blanks were clean of any hits above the detection limits.****METALS****SW6010/7000=****\*The Elements that were not detected above the detection limit were Ag, As, Be, Sb, Se, and Tl. Other elements were detected above the stated detection limits. Hg reported value was a date and not a result. Please correct.****\*All met 6 month holding times.****\*COC information verified.**

**SAMPLE:****SOIL****021-020 BH 6'-6.5'****Lab ID# 9407473-10****VOA/SW8240 =****\*Hits on Acetone at 85 ug/kg, Benzene at 140 ug/kg, 2-Butanone at 31 ug/kg, and Toluene at 14 ug/kg.****\*All met 14 day holding time.****\*COC information verified.****\*All surrogate recoveries were within QC limits.****\*Blanks were clean and no compounds were detected above the detection limits.****SVOA/SW8270 =****\*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****PEST/SW8080 = \*No hits were detected above the assigned detection limits.****\*Met 14 extraction holding time and 40 day extract holding time.****\*COC information verified.****\*Surrogates were valid and within QC Limits.****\*Blanks were clean of any hits above the detection limits.****\*No Raw Data/Chromatograms were provided for this analysis.****TPH/USEPA 418.1=****\*Met 28 day holding time.****\*COC information verified.****\*Hit was detected at 50 mg/kg with the detection limit of 10 mg/kg.****\*Raw data/Chromatogram and surrogate recovery was not provided for.****\*Blanks were clean of any hits above the detection limits.****METALS****SW6010/7000=****\*The Elements that were not detected above the detection limit were Ag, As, Be, Sb, Se, and Tl. Other elements were detected above the stated detection limits. Hg reported value was a date and not a result. Please correct.****\*All met 6 month holding times.****\*COC information verified.**

**SAMPLE:****SOIL****021-020 BH 14'-14.5'****Lab ID# 9407473-11****VOA/SW8240 =**

- \*Hit on Acetone at 13 ug/kg with a detection limit of 10 ug/kg.*
- \*All met 14 day holding time.*
- \*COC information verified.*
- \*All surrogate recoveries were within QC limits.*
- \*Blanks were clean and no compounds were detected above the detection limits.*

**SVOA/SW8270 =**

- \*No hits were detected above the assigned detection limits.*
- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

- \*Met 14 extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Hit was detected at 21 mg/kg with the detection limit of 10 mg/kg.*
- \*Raw data/Chromatogram and surrogate recovery was not provided for.*
- \*Blanks were clean of any hits above the detection limits.*

**METALS****SW6010/7000=**

- \*The Elements that were not detected above the detection limit were Ag, As, Be, Sb, Se, and Tl. Other elements were detected above the stated detection limits. Hg reported value was a date and not a result. Please correct.*
- \*All met 6 month holding times.*
- \*COC information verified.*

**SAMPLE:**

**WATER**

**021-FB 01**

**Lab ID# 9407999-01**

**METALS**

**SW6010/7000=**

*\*All Elements were not detected above the assigned detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

***\*\*Volatiles, Semivolatiles, Pesticides/PCB's, and TPH analyses were canceled due to the receiving temperature of the samples being less than 4 degrees celsius.***

**SAMPLE:**

**WATER**

**021-RB 04**

**Lab ID# 9407999-02**

**METALS**

**SW6010/7000=**

*\*Cadmium and Zinc were elements detected above the detection limits. All other elements were not detected above the assigned detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

***\*\*Volatiles, Semivolatiles, Pesticides/PCB's, and TPH analyses were canceled due to the receiving temperature of the samples being less than 4 degrees celsius.***



**SAMPLE:**

**WATER**

**021-004MW-GW 01**

**Lab ID# 9407999-03**

**METALS**

**SW6010/7000=**

*\*Al, Cd, Cr, Cu, Ni, and Zn were elements detected above the detection limits. All other elements were not detected above the assigned detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

***\*\*Volatiles, Semivolatiles, Pesticides/PCB's, and TPH analyses were canceled due to the receiving temperature of the samples being less than 4 degrees celsius.***

**SAMPLE:**

**WATER**

**021-010MW-GW 01**

**Lab ID# 9407999-05**

**METALS**

**SW6010/7000=**

*\*Al, Cd, Cr, Cu, Ni, and Zn were elements detected above the detection limits. All other elements were not detected above the assigned detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

***\*\*Volatiles, Semivolatiles, Pesticides/PCB's, and TPH analyses were canceled due to the receiving temperature of the samples being less than 4 degrees celsius.***

**SAMPLE:**

**WATER**

**021-010AMW-GW 01      Lab ID# 9407999-06**

**METALS**

**SW6010/7000=**

*\*Al, Ni, and Zn were elements detected above the detection limits. All other elements were not detected above the assigned detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

***\*\*Volatiles, Semivolatiles, Pesticides/PCB's, and TPH analyses were canceled due to the receiving temperature of the samples being less than 4 degrees celsius.***

**SAMPLE:**

**WATER**

**021-014MW-GW 01**

**Lab ID# 9407999-07**

**METALS**

**SW6010/7000=**

*\*Al, Cd, Cr, Cu, Ni, and Zn were elements detected above the detection limits. All other elements were not detected above the assigned detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

***\*\*Volatiles, Semivolatiles, Pesticides/PCB's, and TPH analyses were canceled due to the receiving temperature of the samples being less than 4 degrees celsius.***

**SAMPLE:**

**WATER**

**021-026MW-GW 01**

**Lab ID# 9407999-08**

**METALS**

**SW6010/7000=**

*\*Al, Cd, Cr, Cu, Ni, and Zn were elements detected above the detection limits. All other elements were not detected above the assigned detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

***\*\*Volatiles, Semivolatiles, Pesticides/PCB's, and TPH analyses were canceled due to the receiving temperature of the samples being less than 4 degrees celsius.***

**SAMPLE:**

**WATER**

**021-TB 05**

**Lab ID# 9407999-04**

**VOA/SW8240 =**

***\*Analysis was canceled due to temperature warmer than 4 degrees celsius  
on sample receipt.***

**SAMPLE:**

**SOIL**

**021-004 SD**

**Lab ID# 9407998-10**

**METALS**

**SW6010/7000=**

*\*Al, Cd, Cr, Cu, Pb and Zn were elements detected above the detection limits. All other elements were not detected above the assigned detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

***\*\*Volatiles, Semivolatiles, Pesticides/PCB's, and TPH analyses were canceled due to the receiving temperature of the samples being less than 4 degrees celsius.***

**SAMPLE:**

**SOIL**

**021-005 SD**

**Lab ID# 9407998-11**

**METALS**

**SW6010/7000=**

*\*Al, Be, Cd, Cr, Cu, Ni, Pb and Zn were elements detected above the detection limits. All other elements were not detected above the assigned detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

***\*\*Volatiles, Semivolatiles, Pesticides/PCB's, and TPH analyses were canceled due to the receiving temperature of the samples being less than 4 degrees celsius.***



**SAMPLE:**

**SOIL**

**021-005ASD**

**Lab ID# 9407998-12**

**METALS**

**SW6010/7000=**

*\*Al, Ar, Be, Cr, Cu, Ni, Pb and Zn were elements detected above the detection limits. All other elements were not detected above the assigned detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

***\*\*Volatiles, Semivolatiles, Pesticides/PCB's, and TPH analyses were canceled due to the receiving temperature of the samples being less than 4 degrees celsius.***

**SAMPLE:**

**SOIL**

**021-006 SD**

**Lab ID# 9407998-13**

**METALS**

**SW6010/7000=**

*\*Al, Ar, Be, Cr, Cu, Ni, Pb and Zn were elements detected above the detection limits. All other elements were not detected above the assigned detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

***\*\*Volatiles, Semivolatiles, Pesticides/PCB's, and TPH analyses were canceled due to the receiving temperature of the samples being less than 4 degrees celsius.***

**SAMPLE:**

**SOIL**

**021-006 SD MS**

**Lab ID# 9407998-14**

**METALS**

**SW6010/7000=**

*\*All spiked elements were detected within QC Limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

***\*\*Volatiles, Semivolatiles, Pesticides/PCB's, and TPH analyses were canceled due to the receiving temperature of the samples being less than 4 degrees celsius.***

**SAMPLE:**

**SOIL**

**021-006 SD MSD**

**Lab ID# 9407998-15**

**METALS**

**SW6010/7000=**

*\*All spiked elements were detected within QC Limits. RPD's were within QC Limits except for Al, Cu, and Zn.*

*\*All met 6 month holding times.*

*\*COC information verified.*

***\*\*Volatiles, Semivolatiles, Pesticides/PCB's, and TPH analyses were canceled due to the receiving temperature of the samples being less than 4 degrees celsius.***

**SAMPLE:**

**SOIL**

**021-007 SD**

**Lab ID# 9407A02-01**

**METALS**

**SW6010/7000=**

*\*Al, Ar, Be, Cd, Cr, Cu, Ni, Pb and Zn were elements detected above the detection limits. All other elements were not detected above the assigned detection limits.*

*\*All met 6 month holding times.*

*\*COC information verified.*

***\*\*Volatiles, Semivolatiles, Pesticides/PCB's, and TPH analyses were canceled due to the receiving temperature of the samples being less than 4 degrees celsius.***

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**Duluth Air National Guard Site Investigation  
Duluth, Minnesota 1308-101-S002  
Southern Petroleum Laboratories, Houston, Texas  
Data Validation Brief Summary  
Re-Sampling Event**

**SAMPLE:**

**SEDIMENT**

**021-006SD2**

Lab ID# 9410146-01

**VOA/SW8240 =**

*\*Hit on Methylene chloride was detected at 6 ug/kg with a detection limit of 5 ug/kg.  
\*Met 14 day holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**SVOA/SW8270 =**

*\*Hits on Benzo(a)pyrene at 3000 ug/kg, Di-n-butylphthalate at 330 ug/kg, and Bis(2-Ethylhexyl)phthalate at 1600 ug/kg were detected above the detection limit of 330 ug/kg.  
\*Met 7 day extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 7 day extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*Hit was detected at 20 mg/kg with a detection limit of 10 mg/kg.*

**SAMPLE:****SEDIMENT**

021-005SD2

Lab ID# 9410146-02

VOA/SW8240 =

*\*Hits on Benzene at 5 ug/kg and Chlorobenzene at 5 ug/kg with detection limits of 5 ug/kg. Methylene Chloride was detected at 400 ug/kg with a detection limit of 25 ug/kg.*

*\*Met 14 day holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

SVOA/SW8270 =

*\*Hits on Benzo(a)pyrene at 770 ug/kg, Bis(2-Ethylhexyl)phthalate at 470, and Naphthalene at 520 ug/kg were detected above the detection limit of 330 ug/kg.*

*\*Met 7 day extraction holding time and 40 day extract holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

*PEST/SW8080 = \*No hits were detected above the assigned detection limits.*

*\*Met 7 day extraction holding time and 40 day extract holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

TPH/USEPA 418.1=

*\*Met 28 day holding time.*

*\*COC information verified.*

*\*Hit was detected at 230 mg/kg with a detection limit of 10 mg/kg.*



**SAMPLE:****SEDIMENT****021-007ASD2**

Lab ID# 9410146-03

**VOA/SW8240 =**

*\*Hits on Methylene Chloride at 11 ug/kg with detection limits of 5 ug/kg.  
Acetone was detected at 11 ug/kg with a detection limit of 10 ug/kg.  
\*Met 14 day holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 7 day extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 7 day extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*Hit was detected at 120 mg/kg with a detection limit of 10 mg/kg.*

**SAMPLE:****SEDIMENT****021-007SD2****Lab ID# 9410146-04****VOA/SW8240 =**

*\*Hits on Methylene Chloride at 23 ug/kg with detection limits of 5 ug/kg.  
Acetone was detected at 12 ug/kg with a detection limit of 10 ug/kg.  
\*Met 14 day holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**SVOA/SW8270 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 7 day extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 7 day extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*Hit was detected at 74 mg/kg with a detection limit of 10 mg/kg.*

**SAMPLE:****SEDIMENT****021-004SD2****Lab ID# 9410146-05****VOA/SW8240 =**

*\*Hits on Methylene Chloride at 13 ug/kg with detection limits of 5 ug/kg.  
Acetone was detected at 35 ug/kg with a detection limit of 10 ug/kg.*

*\*Met 14 day holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

**SVOA/SW8270 =**

*\*Hit on Benzo(a)pyrene at 530 ug/kg with a detection limit of 330 ug/kg.*

*\*Met 7 day extraction holding time and 40 day extract holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 7 day extraction holding time and 40 day extract holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.*

*\*COC information verified.*

*\*Hit was detected at 450 mg/kg with a detection limit of 10 mg/kg.*

**SAMPLE:****SEDIMENT****021-004SD2 MS****Lab ID# 9410146-06****VOA/SW8240 =**

- \*All spiked amounts were recovered within QC Limits.*
- \*Met 14 day holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**SVOA/SW8270 =**

- \*All spiked amounts were recovered within QC Limits.*
- \*Met 7 day extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*All spiked amounts were recovered within QC Limits.*

- \*Met 7 day extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**TPH/USEPA 418.1=**

- \*Met 28 day holding time.*
- \*COC information verified.*
- \*Spiked recovery was detected at 530 mg/kg with a spike of 500 mg/kg.*

**SAMPLE:****SEDIMENT****021-004SD2 MSD****Lab ID# 9410146-07****VOA/SW8240 =***\*All spiked amounts were recovered within QC Limits. RPD's were within QC Range.**\*Met 14 day holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***SVOA/SW8270 =***\*All spiked amounts were recovered within QC Limits. RPD's were within QC Range.**\*Met 7 day extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***PEST/SW8080 =** *\*All spiked amounts were recovered within QC Limits. RPD's were within QC Range.**\*Met 7 day extraction holding time and 40 day extract holding time.**\*COC information verified.**\*Surrogates were valid and within QC Limits.**\*Blanks were clean of any hits above the detection limits.***TPH/USEPA 418.1=***\*Met 28 day holding time.**\*COC information verified.**\*Spiked recovery was detected at 530 mg/kg with a spike of 500 mg/kg. RPD's were within QC Range.*

**SAMPLE:**

**SOIL**

**018-007BH2 1.3'-1.7'**

**Lab ID# 9410180-01**

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.*

*\*Met 14 day holding time.*

*\*COC information verified.*

*\*One of the three surrogates was above and outside QC Limits due to coeluting interference. No re-analysis was performed.*

*\*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**018-007BH2 1.7'-2.1'**

**Lab ID# 9410180-02**

**VOA/SW8240 =**

***\*No hits were detected above the assigned detection limits.***

***\*Met 14 day holding time.***

***\*COC information verified.***

***\*All surrogates were valid and within QC Limits.***

***\*Blanks were clean of any hits above the detection limits.***

**SAMPLE:**

**SOIL**

**018-007BH2 2.1'-2.5'**

**Lab ID# 9410180-03**

**VOA/SW8240 =**

***\*Hit on Total Xylenes at 74 ug/kg with a detection limit of 25 ug/kg.***

***\*Met 14 day holding time.***

***\*COC information verified.***

***\*All surrogates were valid and within QC Limits.***

***\*Blanks were clean of any hits above the detection limits.***



**SAMPLE:**

**SOIL**

**018-006BH2 0.8'-1.3'**

**Lab ID# 9410180-04**

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.*

*\*Met 14 day holding time.*

*\*COC information verified.*

*\*All surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**018-006BH2 1.3'-1.7'**

**Lab ID# 9410180-05**

**VOA/SW8240 =**

- \*No hits were detected above the assigned detection limits.*
- \*Met 14 day holding time.*
- \*COC information verified.*
- \*All surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**018-006BH2 2.1'-2.5'**

**Lab ID# 9410180-06**

**VOA/SW8240 =**

***\*No hits were detected above the assigned detection limits.***

***\*Met 14 day holding time.***

***\*COC information verified.***

***\*All surrogates were valid and within QC Limits.***

***\*Blanks were clean of any hits above the detection limits.***

**SAMPLE:**

**SOIL**

**018-RB02**

**Lab ID# 9410180-07**

**VOA/SW8240 =**

***\*No hits were detected above the assigned detection limits.***

***\*Met 14 day holding time.***

***\*COC information verified.***

***\*All surrogates were valid and within QC Limits.***

***\*Blanks were clean of any hits above the detection limits.***

**SAMPLE:**

**WATER**

**021-RB07**

**Lab ID# 9410180-08**

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.  
\*Met 14 day holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**SVOA/SW8270 =**

*\*Hit on Bis(2-Ethylhexyl)phthalate at 8 ug/l with a detection limit of 5 ug/l.  
\*Met 7 day extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 7 day extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.  
\*No raw data information accompanied the Report Forms.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*No hit was detected above the detection limit of 0.5 mg/l.*

**SAMPLE:**

**SOIL**

**018-006BH2 0.8-1.3 MS Lab ID# 9410180-11**

**VOA/SW8240 =**

- \*All spiked recoveries were recovered within QC Limits.*
- \*Met 14 day holding time.*
- \*COC information verified.*
- \*All surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**SOIL**

**018-006BH2 0.8-1.3 MSD Lab ID# 9410180-12**

**VOA/SW8240 =**

***\*All spiked recoveries were recovered within QC Limits. All RPD's were within QC Range.***

***\*Met 14 day holding time.***

***\*COC information verified.***

***\*All surrogates were valid and within QC Limits.***

***\*Blanks were clean of any hits above the detection limits.***

**SAMPLE:**

**SOIL**

**017-010BH2 0.5-1.0**

**Lab ID# 9410269-01**

**\*\*\*Date sample on the report form needs to be corrected from 10/4/94 to 10/6/94.**

**SVOA/SW8270 =**

**\*No hits were detected above the detection limits assigned for all compounds.**

**\*Met 7 day extraction holding time and 40 day extract holding time.**

**\*COC information verified.**

**\*Surrogates were valid and within QC Limits.**

**\*Blanks were clean of any hits above the detection limits.**

**TPH/USEPA 418.1=**

**\*Met 28 day holding time.**

**\*COC information verified.**

**\*Hit was detected at 180 mg/kg with a detection limit of 10 mg/kg.**



**SAMPLE:**

**WATER**

**021-009MW-GW02**

**Lab ID# 9410269-02**

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits.*

*\*Met 14 day holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**WATER**

**021-014MW-GW02**

**Lab ID# 9410269-03**

**VOA/SW8240 =**

*\*Hit was detected on Trichloroethane at 68 ug/l with a detection limit of 5 ug/l.*

*\*Met 14 day holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**WATER**

**021-010MW-GW02**

**Lab ID# 9410269-04**

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits for all compounds.*

*\*Met 14 day holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**WATER**

**021-010AMW-GW02**

**Lab ID# 9410269-05**

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits for all compounds.*

*\*Met 14 day holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**WATER**

**021-026MW-GW03**

**Lab ID# 9410269-06**

**VOA/SW8240 =**

*\*No hits were detected above the assigned detection limits for all compounds.*

*\*Met 14 day holding time.*

*\*COC information verified.*

*\*Surrogates were valid and within QC Limits.*

*\*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**WATER**

**021-RB08**

**Lab ID# 9410269-07**

**VOA/SW8240 =**

***\*Hit was detected on 2-Butanone at 22 ug/l with a detection limit of 20 ug/l.***

***\*Met 14 day holding time.***

***\*COC information verified.***

***\*Surrogates were valid and within QC Limits.***

***\*Blanks were clean of any hits above the detection limits.***

**SAMPLE:**

**WATER**

**DANGB-FB01**

**Lab ID# 9410269-08**

**VOA/SW8240 =**

*\*Hit on 2-Butanone was detected at 22 ug/l with a detection limit of 20 ug/l.  
\*Met 14 day holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**SVOA/SW8270 =**

*\*No hits above the assigned detection limits for all compounds.  
\*Met 7 day extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 7 day extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.  
\*Raw data did not accompany the Report Form.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*No hit was detected above the detection limit of 0.5 mg/l.*

**SAMPLE:****WATER****DANGB-FB02**

Lab ID# 9410269-09

**VOA/SW8240 =**

*\*Hit on Chloroform was detected at 12 ug/l with a detection limit of 5 ug/l.  
\*Met 14 day holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**SVOA/SW8270 =**

*\*No hits above the assigned detection limits for all compounds.  
\*Met 7 day extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.*

**PEST/SW8080 =** *\*No hits were detected above the assigned detection limits.*

*\*Met 7 day extraction holding time and 40 day extract holding time.  
\*COC information verified.  
\*Surrogates were valid and within QC Limits.  
\*Blanks were clean of any hits above the detection limits.  
\*Raw data did not accompany the Report Form.*

**TPH/USEPA 418.1=**

*\*Met 28 day holding time.  
\*COC information verified.  
\*No hit was detected above the detection limit of 0.5 mg/l.*



**SAMPLE:**

**WATER**

**TRIP BLANK**

Lab ID# 9410146-08

VOA/SW8240 =

- \*No hits were detected above the assigned detection limits.*
- \*Met 14 day extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**WATER**

**TRIP BLANK**

Lab ID# 9410180-10

VOA/SW8240 =

- \*No hits were detected above the assigned detection limits.*
- \*Met 14 day extraction holding time and 40 day extract holding time.*
- \*COC information verified.*
- \*All surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

**SAMPLE:**

**WATER**

**TRIP BLANK**

Lab ID# 9410269-10

VOA/SW8240 =

- \*No hits were detected above the assigned detection limits for all compounds.*
- \*Met 14 day holding time.*
- \*COC information verified.*
- \*Surrogates were valid and within QC Limits.*
- \*Blanks were clean of any hits above the detection limits.*

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**OPERATIONAL TECHNOLOGIES**  
C O R P O R A T I O N

**Minnesota Air National Guard Site Investigation  
Duluth, Minnesota 1315-213  
Lake Superior Laboratories  
Duluth, Minnesota  
Duluth RFI Data Evaluation Review**

**SAMPLE:**

**SOIL**

**017-022BH 2'-2.5'**

Lab ID# 2575-95LS

Date Sampled: 05/17/95

Date Received: 05/17/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

017-023BH 2'-2.5'

Lab ID# 2576-95LS

Date Sampled:

05/17/95

Date Received: 05/17/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

017-023BH 5'-5.6'

Lab ID# 2577-95LS

Date Sampled: 05/17/95

Date Received: 05/17/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

017-024BH 1.5'-2'

Lab ID# 2578-95LS

Date Sampled: 05/17/95

Date Received: 05/17/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 13.4 mg/kg above the assigned detection limit of 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

017-024BH 5'-5.5'

Lab ID# 2579-95LS

Date Sampled: 05/17/95

Date Received: 05/17/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

\*Hit was detected at 70.6 mg/kg above the assigned detection limit of 4 mg/kg.

\*Met 14 day analysis holding time.

\*COC information verified.

\*All initial and continuing calibrations were within acceptable QC Limits.

\*All surrogate recoveries were within acceptable QC limits.

\*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

\*No hits were detected above the assigned detection limits.

\*Met 14 day analysis holding time.

\*COC information verified.

\*All initial and continuing calibrations were within acceptable QC Limits.

\*All surrogate recoveries were within acceptable QC limits.

\*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

**017-025BH 1.5'-2'**

Lab ID# 2580-95LS

Date Sampled: 05/17/95

Date Received: 05/17/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 144 mg/kg above the assigned detection limit of 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.



**SAMPLE:**

**SOIL**

017-025BH 5.5' -6'

Lab ID# 2581-95LS

Date Sampled: 05/17/95

Date Received: 05/17/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 9.92 mg/kg above the assigned detection limit of 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

017-028BH 2'-2.5'

Lab ID# 2582-95LS

Date Sampled: 05/17/95

Date Received: 05/17/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

**017-028BH 5.5'-6'**

Lab ID# 2583-95LS

Date Sampled: 05/17/95

Date Received: 05/17/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**WATER**

**017-001RB**

Lab ID# 2584-95LS

Date Sampled: 05/17/95

Date Received: 05/17/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

\*No analysis was performed as requested per Chain of Custody. Laboratory overlooked the analysis requested.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

021-026BH 2'-2.5'

Lab ID# 2537-95LS

Date Sampled:

05/16/95

Date Received: 05/16/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 88 mg/kg above the assigned detection limit of 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

**021-026BH 9'-9.5'**

Lab ID# 2538-95LS

Date Sampled: 05/16/95

Date Received: 05/16/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 8.70 mg/kg above the assigned detection limit of 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

**021-027BH 2'-2.5'**

Lab ID# 2539-95LS

Date Sampled:

05/16/95

Date Received: 05/16/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 27.7 mg/kg above the assigned detection limit of 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

021-027BH 8'-9'

Lab ID# 2540-95LS

Date Sampled: 05/16/95

Date Received: 05/16/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 29.1 mg/kg above the assigned detection limit of 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.



**SAMPLE:**

**SOIL**

021-027BH 9'-10'

Lab ID# 2541-95LS

Date Sampled: 05/16/95

Date Received: 05/16/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 5.60 mg/kg above the assigned detection limit of 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

**021-028BH 2'-2.5'**

Lab ID# 2542-95LS

Date Sampled: 05/16/95

Date Received: 05/16/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

021-028BH 1.5'-2'

Lab ID# 2543-95LS

Date Sampled: 05/16/95

Date Received: 05/16/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 4.42 mg/kg above the assigned detection limit of 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

**021-028BH 5.5'-6'**

Lab ID# 2544-95LS

Date Sampled: 05/16/95

Date Received: 05/16/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 6.61 mg/kg above the assigned detection limit of 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

**017-031BH 2'-2.5'**

Lab ID# 2621-95LS

Date Sampled: 05/19/95

Date Received: 05/19/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 19.3 mg/kg above the assigned detection limit of 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

**017-031BH 2'-2.5' (Dup)**    Lab ID# 2622-95LS

Date Sampled: 05/19/95

Date Received: 05/19/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 4.02 mg/kg above the assigned detection limit of 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

**017-031BH 5.5'-6'**

Lab ID# 2623-95LS

Date Sampled: 05/19/95

Date Received: 05/19/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 41.2 mg/kg above the assigned detection limits of 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

**017-032BH 2'-2.5'**

Lab ID# 2624-95LS

Date Sampled:

05/19/95

Date Received: 05/19/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.



**SAMPLE:**

**SOIL**

**017-021BH 2'-2.5'**

Lab ID# 2625-95LS

Date Sampled: 05/19/95

Date Received: 05/19/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

**017-021BH 5.5'-6'**

Lab ID# 2626-95LS

Date Sampled: 05/19/95

Date Received: 05/19/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

**017-030BH 2'-2.5'**

Lab ID# 2627-95LS

Date Sampled: 05/19/95

Date Received: 05/19/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 189 mg/kg above the assigned detection limit at 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

017-029BH 2'-2.5'

Lab ID# 2628-95LS

Date Sampled: 05/19/95

Date Received: 05/19/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

- \*Hit was detected at 4.20 mg/kg above the assigned detection limit of 4 mg/kg.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**SAMPLE:**

**SOIL**

**017-029BH 2'-2.5' Dup**

Lab ID# 2629-95LS

Date Sampled:

05/19/95

Date Received:

05/19/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

\*Hit was detected at 5.60 mg/kg above the assigned detection limit of 4 mg/kg.

\*Met 14 day analysis holding time.

\*COC information verified.

\*All initial and continuing calibrations were within acceptable QC Limits.

\*All surrogate recoveries were within acceptable QC limits.

\*Blanks were clean of any contamination.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

\*No hits were detected above the assigned detection limits.

\*Met 14 day analysis holding time.

\*COC information verified.

\*All initial and continuing calibrations were within acceptable QC Limits.

\*All surrogate recoveries were within acceptable QC limits.

\*Blanks were clean of any contamination.

**SAMPLE:**

**WATER**

**017-002RB**

Lab ID# 2630-95LS

Date Sampled: 05/19/95

Date Received: 05/19/95

**Diesel Range Organics/WDNR Method**

SW846-8015 =

\*No analysis was performed as per Chain of Custody requested analyses. The laboratory overlooked the analyses requested on the COC.

**Gasoline Range Organics/WDNR Method**

SW846-8015 =

- \*No hits were detected above the assigned detection limits.
- \*Met 14 day analysis holding time.
- \*COC information verified.
- \*All initial and continuing calibrations were within acceptable QC Limits.
- \*All surrogate recoveries were within acceptable QC limits.
- \*Blanks were clean of any contamination.

**APPENDIX J**

**ANALYTICAL RESULTS OF THE SOIL, GROUNDWATER,  
AND SEDIMENT SAMPLES**

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## **SECTION J.1**

### **INTRODUCTION**

This appendix concerns the analytical results of soil, groundwater, and sediment samples collected during the recent RCRA Facility Investigation at the 148th Fighter Group, Minnesota ANG, Duluth, Minnesota. Table J.1 is a summary of the analytical results of soil samples collected from Site 17. Table J.2 is a summary of the analytical results of soil samples collected from Site 18. Table J.3 is a summary of the analytical results of soil samples collected from Site 21. Table J.4 is a summary of the analytical results of groundwater samples collected from Site 21. Table J.5 is a summary of the analytical results of sediment samples collected from Site 21.

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**Table J.1**  
**Analytical Results of Soil Samples Collected from Site 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Analyte	Location No.: Sample Date: Lab Sample No.:	017-010 BH2-0.5-1.0 10/4/94 9410769-01	017-010 BH-5.0-5.5 7/19/94 9407703-10	017-010 BH-5.0-5.5 DUP 7/19/94 9407703-11	017-010 BH-9.0-9.5 7/19/94 9407703-12	017-011 BH-1.5-2.0 7/19/94 9407703-08	017-011 BH-5.0-5.5 7/19/94 9407703-09	017-012 BH-2.0-2.5 7/19/94 9407703-06
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SVOs (ug/kg)	660U	330U	330U	330U	330U	1,000	330U	330U
Acenaphthene	660U	330U	330U	330U	330U	330U	330U	330U
Acenaphthylene	660U	330U	330U	330U	330U	330U	330U	330U
Aniline	660U	330U	330U	330U	330U	330U	330U	330U
Anthracene	660U	330U	330U	330U	330U	330U	330U	330U
Benzo (a) Anthracene	660U	330U	330U	330U	330U	2,800	330U	330U
Benzo (b) Fluoranthene	660U	330U	330U	330U	330U	330U	330U	330U
Benzo (k) Fluoranthene	660U	330U	330U	330U	330U	2,900	330U	330U
Benzo (a) Pyrene	660U	330U	330U	330U	330U	3,100	330U	330U
Benzoic Acid	3,200U	1,600U	1,600U	1,600U	1,600U	1,600U	1,600U	1,600U
Benzo(g,h,i)Perylene	660U	330U	330U	330U	330U	2,100	330U	330U
Benzyl alcohol	660U	330U	330U	330U	330U	330U	330U	330U
4-Bromophenylphenyl ether	660U	330U	330U	330U	330U	330U	330U	330U
Burylbenzylphthalate	660U	330U	330U	330U	330U	330U	330U	330U
di-n-Butyl phthalate	660U	330U	330U	330U	330U	330U	330U	330U
Carbazole	660U	330U	330U	330U	330U	870	330U	330U
4-Chloroaniline	660U	330U	330U	330U	330U	330U	330U	330U
bis(2-Chloroethoxy)Methane	660U	330U	330U	330U	330U	330U	330U	330U
bis(2-Chloroethyl)Ether	660U	330U	330U	330U	330U	330U	330U	330U
bis(2-Chloroisopropyl)Ether	660U	330U	330U	330U	330U	330U	330U	330U
4-Chloro-3-Methylphenol	660U	330U	330U	330U	330U	330U	330U	330U
2-Chloronaphthalene	660U	330U	330U	330U	330U	330U	330U	330U
2-Chlorophenol	660U	330U	330U	330U	330U	330U	330U	330U
4-Chlorophenylphenyl ether	660U	330U	330U	330U	330U	330U	330U	330U
Chrysene	660U	330U	330U	330U	330U	3,600	330U	330U
Dibenz(a,h)Anthracene	660U	330U	330U	330U	330U	330U	330U	330U
Dibenzofuran	660U	330U	330U	330U	330U	450	330U	330U
1,2-Dichlorobenzene	660U	330U	330U	330U	330U	330U	330U	330U
1,3-Dichlorobenzene	660U	330U	330U	330U	330U	330U	330U	330U
1,4-Dichlorobenzene	660U	330U	330U	330U	330U	330U	330U	330U
3,3'-Dichlorobenzidine	660U	330U	330U	330U	330U	330U	330U	330U
2,4-Dichlorophenol	660U	330U	330U	330U	330U	330U	330U	330U
Diethylphthalate	660U	330U	330U	330U	330U	330U	330U	330U
2,4-Dimethylphenol	660U	330U	330U	330U	330U	330U	330U	330U
Dimethyl Phthalate	660U	330U	330U	330U	330U	330U	330U	330U

U - Indicates compound analyzed for but not detected  
SVOs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons

BH - Borehole  
DUP - Duplicate

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.1**  
**Analytical Results of Soil Samples Collected from Site 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	017-010 BH2-0.5-1.0 10/4/94 9410269-01	017-010 BH-5.0-5.5 7/19/94 9407703-10	017-010 BH-5.0-5.5 DUP 7/19/94 9407703-11	017-010 BH-9.0-9.5 7/19/94 9407703-12	017-011 BH-1.5-2.0 7/19/94 9407703-08	017-011 BH-5.0-5.5 7/19/94 9407703-09	017-012 BH-2.0-2.5 7/19/94 9407703-06
Analyte	Matrix	Soil	Soil	Soil	Soil	Soil	Soil
SVOCs (ug/kg)							
4,6-Dinitro-2-Methylphenol		1,600U	800U	800U	800U	800U	800U
2,4-Dinitrophenol		1,600U	800U	800U	800U	800U	800U
2,4-Dinitrotoluene		660U	330U	330U	330U	330U	330U
2,6-Dinitrotoluene		660U	330U	330U	330U	330U	330U
1,2-Diphenylhydrazine		660U	330U	330U	330U	330U	330U
bis (2-Ethylhexyl) Phthalate		660U	330U	330U	330U	330U	330U
Fluoranthene		660U	330U	330U	5,800	330U	330U
Fluorene		660U	330U	330U	330U	330U	330U
Hexachlorobenzene		660U	330U	330U	330U	330U	330U
Hexachlorobutadiene		660U	330U	330U	330U	330U	330U
Hexachloroethane		660U	330U	330U	330U	330U	330U
Hexachlorocyclopentadiene		660U	330U	330U	330U	330U	330U
Indeno (1,2,3-cd) Pyrene		660U	330U	330U	1,800	330U	330U
Isophorone		660U	330U	330U	330U	330U	330U
2-Methylnaphthalene		660U	330U	330U	330U	330U	330U
2-Methylphenol		660U	330U	330U	330U	330U	330U
4-Methylphenol		660U	330U	330U	330U	330U	330U
Naphthalene		660U	330U	330U	400	330U	330U
2-Nitroaniline		660U	330U	330U	330U	330U	330U
3-Nitroaniline		1,600U	800U	800U	330U	800U	800U
4-Nitroaniline		1,600U	800U	800U	800U	800U	800U
Nitrobenzene		660U	330U	330U	330U	330U	330U
2-Nitrophenol		660U	330U	330U	330U	330U	330U
4-Nitrophenol		1,600U	800U	800U	800U	800U	800U
(N-Nitrosodiphenylamine (1)		660U	330U	330U	330U	330U	330U
N Nitroso Di n Propylamine		660U	330U	330U	330U	330U	330U
(Di n Octyl Phthalate		660U	330U	330U	330U	330U	330U
Pentachlorophenol		1,600U	800U	800U	800U	800U	800U
Phenanthrene		660U	330U	330U	800U	800U	800U
Phenol		660U	330U	330U	4,900	330U	330U
Pyrene		660U	330U	330U	330U	330U	330U
Pyridine		660U	330U	330U	4,900	330U	330U
1,2,4-Trichlorobenzene		660U	330U	330U	330U	330U	330U
2,4,5-Trichlorophenol		1,600U	800U	800U	330U	330U	330U
2,4,6-Trichlorophenol		660U	330U	330U	800U	800U	800U
TPH (mg/kg)		180	36	22	10U	180	25
							190

U - In this compound analyzed for but not detected  
SVOCs - Semi-volatile organic compounds  
TPH - Total petroleum hydrocarbons

BH - Borehole  
DUP - Duplicate

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

Table J.1  
Analytical Results of Soil Samples Collected from Site 17  
Minnesota Air National Guard Base  
Duluth, Minnesota

Location No.: Sample Date: Lab Sample No.:	017-012 BH-5.0-5.5 7/19/94 9407703-07	017-013 BH-1.5-2.0 7/18/94 9407680-01	017-013 BH-5.0-5.5 7/19/94 9407680-02	017-013 BH-9.0-9.5 7/18/94 9407680-03	017-014 BH-1.5-2.0 7/19/94 9407703-02	017-014 BH-5.0-5.5 7/19/94 9407703-03	017-014 BH-5.0-5.5 DUP 7/19/94 9407703-04
Analyte	Matrix	Soil	Soil	Soil	Soil	Soil	Soil
SVOCs (ug/kg)							
Acenaphthene	330U	330U	330U	330U	3,300U	330U	330U
Acenaphthylene	330U	330U	330U	330U	3,300U	330U	330U
Aniline	330U	330U	330U	330U	3,300U	330U	330U
Anthracene	330U	330U	330U	330U	3,300U	330U	330U
Benzo (a) Anthracene	330U	330U	330U	330U	3,300U	330U	330U
Benzo (b) Fluoranthene	330U	420	330U	330U	3,300U	330U	330U
Benzo (k) Fluoranthene	330U	330U	330U	330U	3,300U	330U	330U
Benzo (a) Pyrene	330U	330U	330U	330U	3,300U	330U	330U
Benzoic Acid	1,600U	1,600U	1,600U	1,600U	16,000U	1,600U	1,600U
Benzo(g,h,i)Perylene	330U	330U	330U	330U	3,300U	330U	330U
Benzyl alcohol	330U	330U	330U	330U	3,300U	330U	330U
4-Bromophenylphenyl ether	330U	330U	330U	330U	3,300U	330U	330U
Butylbenzylphthalate	330U	330U	330U	330U	3,300U	330U	330U
di-n-Butyl phthalate	330U	330U	330U	430	3,300U	330U	330U
Carbazole	330U	330U	330U	330U	3,300U	330U	330U
4-Chloroaniline	330U	330U	330U	330U	3,300U	330U	330U
bis(2-Chloroethoxy)Methane	330U	330U	330U	330U	3,300U	330U	330U
bis(2-Chloroethyl)Ether	330U	330U	330U	330U	3,300U	330U	330U
bis(2-Chloroisopropyl)Ether	330U	330U	330U	330U	3,300U	330U	330U
4-Chloro-3-Methylphenol	330U	330U	330U	330U	3,300U	330U	330U
2-Chloronaphthalene	330U	330U	330U	330U	3,300U	330U	330U
2-Chlorophenol	330U	330U	330U	330U	3,300U	330U	330U
4-Chlorophenylphenyl ether	330U	330U	330U	330U	3,300U	330U	330U
Chrysene	330U	370	330U	330U	3,300U	330U	330U
Dibenz(a,h)Anthracene	330U	330U	330U	330U	3,300U	330U	330U
Dibenzofuran	330U	330U	330U	330U	3,300U	330U	330U
1,2-Dichlorobenzene	330U	330U	330U	330U	3,300U	330U	330U
1,3-Dichlorobenzene	330U	330U	330U	330U	3,300U	330U	330U
1,4-Dichlorobenzene	330U	330U	330U	330U	3,300U	330U	330U
3,3'-Dichlorobenzidine	330U	330U	330U	330U	3,300U	330U	330U
2,4-Dichlorophenol	330U	330U	330U	330U	3,300U	330U	330U
Diethylphthalate	330U	330U	330U	330U	3,300U	330U	330U
2,4-Dimethylphenol	330U	330U	330U	330U	3,300U	330U	330U
Dimethyl Phthalate	330U	330U	330U	330U	3,300U	330U	330U

U - Indicates compound analyzed for but not detected  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons

BH - Borehole  
DUP - Duplicate

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.1**  
**Analytical Results of Soil Samples Collected from Site 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Analyte	Matrix	017-012 BH-5.0-5.5		017-013 BH-1.5-2.0		017-013 BH-5.0-5.5		017-013 BH-9.0-9.5		017-014 BH-1.5-2.0		017-014 BH-5.0-5.5		017-014 BH-5.0-5.5 DUP	
		7/19/94	Soil	7/18/94	Soil	7/18/94	Soil	7/18/94	Soil	7/19/94	Soil	7/19/94	Soil	7/19/94	Soil
SVOCs (ug/kg)															
4,6-Dinitro-2-Methylphenol		800U		800U		800U		800U		8,000U		800U		800U	
2,4-Dinitrophenol		800U		800U		800U		800U		8,000U		800U		800U	
2,4-Dinitrotoluene		330U		330U		330U		330U		3,300U		330U		330U	
2,6-Dinitrotoluene		330U		330U		330U		330U		3,300U		330U		330U	
1,2-Diphenylhydrazine		330U		330U		330U		330U		3,300U		330U		330U	
bis (2-Ethylhexyl) Phthalate		330U		330U		330U		330U		3,300U		330U		330U	
Fluoranthene		330U		590		330U		330U		3,300U		330U		330U	
Fluorene		330U		330U		330U		330U		3,300U		330U		330U	
Hexachlorobenzene		330U		330U		330U		330U		3,300U		330U		330U	
Hexachlorobutadiene		330U		330U		330U		330U		3,300U		330U		330U	
Hexachloroethane		330U		330U		330U		330U		3,300U		330U		330U	
Hexachlorocyclopentadiene		330U		330U		330U		330U		3,300U		330U		330U	
Indeno (1,2,3-cd) Pyrene		330U		330U		330U		330U		3,300U		330U		330U	
Isophorone		330U		330U		330U		330U		3,300U		330U		330U	
2-Methylnaphthalene		330U		330U		330U		330U		3,300U		330U		330U	
2-Methylphenol		330U		330U		330U		330U		3,300U		330U		330U	
4-Methylphenol		330U		330U		330U		330U		3,300U		330U		330U	
Naphthalene		330U		330U		330U		330U		3,300U		330U		330U	
2-Nitroaniline		330U		800U		800U		800U		3,300U		330U		330U	
3-Nitroaniline		800U		800U		800U		800U		8,000U		800U		800U	
4-Nitroaniline		800U		800U		800U		800U		8,000U		800U		800U	
Nitrobenzene		330U		330U		330U		330U		3,300U		330U		330U	
2-Nitrophenol		330U		330U		330U		330U		3,300U		330U		330U	
4-Nitrophenol		800U		800U		800U		800U		8,000U		800U		800U	
N-Nitrosodiphenylamine (1)		330U		330U		330U		330U		3,300U		330U		330U	
N-Nitroso-Di-n-Propylamine		330U		330U		330U		330U		3,300U		330U		330U	
Di-n-Octyl Phthalate		330U		330U		330U		330U		3,300U		330U		330U	
Pentachlorophenol		800U		800U		800U		800U		8,000U		800U		800U	
Phenanthrene		330U		390		330U		330U		3,300U		330U		330U	
Phenol		330U		330U		330U		330U		3,300U		330U		330U	
Pyrene		330U		640		330U		330U		3,300U		330U		330U	
Pyridine		330U		330U		330U		330U		3,300U		330U		330U	
1,2,4-Trichlorobenzene		330U		330U		330U		330U		3,300U		330U		330U	
2,4,5-Trichlorophenol		800U		800U		800U		800U		8,000U		800U		800U	
2,4,6-Trichlorophenol		330U		330U		330U		330U		3,300U		330U		330U	
<b>TPH (mg/kg)</b>		<b>13</b>		<b>275</b>		<b>370</b>		<b>34</b>		<b>3,600</b>		<b>350</b>		<b>49</b>	

U - Indicates compound analyzed for but not detected  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons

BH - Borehole  
DUP - Duplicate

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.1**  
**Analytical Results of Soil Samples Collected from Site 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:		017-014 BH-9.0-9.5 7/19/94 9407703-05	017-015 BH-2.0-2.5 7/18/94 9407680-04	017-015 BH-5.5-6.0 7/18/94 9407680-05	017-015 BH-9.5-10.0 7/18/94 9407680-06	017-016 BH-1.5-2.0 7/18/94 9407680-07	017-016 BH-5.0-5.5 7/18/94 9407680-08	017-016 BH-9.0-9.5 7/18/94 9407680-09
Analyte	Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SVOCs (ug/kg)								
Acenaphthene		330U	660U	660U	660U	1,600U	330U	330U
Acenaphthylene		330U	660U	660U	660U	1,600U	330U	330U
Aniline		330U	660U	660U	660U	1,600U	330U	330U
Anthracene		330U	660U	660U	660U	1,600U	330U	330U
Benzo (a) Anthracene		330U	660U	660U	660U	1,600U	330U	330U
Benzo (b) Fluoranthene		330U	660U	660U	660U	1,600U	330U	330U
Benzo (k) Fluoranthene		330U	660U	660U	660U	1,600U	330U	330U
Benzo (a) Pyrene		330U	660U	660U	660U	1,600U	330U	330U
Benzoic Acid		1,600U	3,200U	3,200U	3,200U	1,600U	1,600U	1,600U
Benzo(g,h,i)Perylene		330U	660U	660U	660U	1,600U	330U	330U
Benzyl alcohol		330U	660U	660U	660U	1,600U	330U	330U
4-Bromophenylphenyl ether		330U	660U	660U	660U	1,600U	330U	330U
Butylbenzylphthalate		330U	660U	660U	660U	1,600U	330U	330U
di-n Butyl phthalate		330U	660U	660U	660U	1,600U	330U	330U
Carbazole		330U	660U	660U	660U	1,600U	330U	330U
4-Chloroaniline		330U	660U	660U	660U	1,600U	330U	330U
bis(2-Chloroethoxy)Methane		330U	660U	660U	660U	1,600U	330U	330U
bis(2-Chloroethyl)Ether		330U	660U	660U	660U	1,600U	330U	330U
bis(2-Chloroisopropyl)Ether		330U	660U	660U	660U	1,600U	330U	330U
4-Chloro-3-Methylphenol		330U	660U	660U	660U	1,600U	330U	330U
2-Chloronaphthalene		330U	660U	660U	660U	1,600U	330U	330U
2-Chlorophenol		330U	660U	660U	660U	1,600U	330U	330U
4-Chlorophenylphenyl ether		330U	660U	660U	660U	1,600U	330U	330U
Chrysene		330U	660U	660U	660U	1,600U	330U	330U
Dibenz(a,h)Anthracene		330U	660U	660U	660U	1,600U	330U	330U
Dibenzofuran		330U	660U	660U	660U	1,600U	330U	330U
1,2-Dichlorobenzene		330U	660U	660U	660U	1,600U	330U	330U
1,3-Dichlorobenzene		330U	660U	660U	660U	1,600U	330U	330U
1,4-Dichlorobenzene		330U	660U	660U	660U	1,600U	330U	330U
3,3'-Dichlorobenzidine		330U	660U	660U	660U	1,600U	330U	330U
2,4-Dichlorophenol		330U	660U	660U	660U	1,600U	330U	330U
Diethylphthalate		330U	660U	660U	660U	1,600U	330U	330U
2,4-Dimethylphenol		330U	660U	660U	660U	1,600U	330U	330U
Dimethyl Phthalate		330U	660U	660U	660U	1,600U	330U	330U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons

BH - Borehole  
DUP - Duplicate

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.1**  
**Analytical Results of Soil Samples Collected from Site 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Analyte	Matrix	017-014 BH-9.0-9.5		017-015 BH-2.0-2.5		017-015 BH-5.5-6.0		017-015 BH-9.5-10.0		017-016 BH-1.5-2.0		017-016 BH-5.0-5.5		017-016 BH-9.0-9.5	
		7/19/94	Soil	7/18/94	Soil	7/18/94	Soil	7/18/94	Soil	7/18/94	Soil	7/18/94	Soil	7/18/94	Soil
SVOCs (ug/kg)															
4,6-Dinitro-2-Methylphenol		800U		1,600U		1,600U		1,600U		4,000U		800U		800U	
2,4-Dinitrophenol		800U		1,600U		1,600U		1,600U		4,000U		800U		800U	
2,4-Dinitrotoluene		330U		660U		660U		660U		1,600U		330U		330U	
2,6-Dinitrotoluene		330U		660U		660U		660U		1,600U		330U		330U	
1,2-Diphenylhydrazine		330U		660U		660U		660U		1,600U		330U		330U	
bis (2-Ethylhexyl) Phthalate		330U		660U		660U		660U		1,600U		330U		330U	
Fluoranthene		330U		660U		660U		660U		1,600U		330U		330U	
Fluorene		330U		660U		660U		660U		1,600U		330U		330U	
Hexachlorobenzene		330U		660U		660U		660U		1,600U		330U		330U	
Hexachlorobutadiene		330U		660U		660U		660U		1,600U		330U		330U	
Hexachloroethane		330U		660U		660U		660U		1,600U		330U		330U	
Hexachlorocyclopentadiene		330U		660U		660U		660U		1,600U		330U		330U	
Indeno (1,2,3-cd) Pyrene		330U		660U		660U		660U		1,600U		330U		330U	
Isophorone		330U		660U		660U		660U		1,600U		330U		330U	
2-Methylnaphthalene		330U		660U		660U		660U		1,600U		330U		330U	
2-Methylphenol		330U		660U		660U		660U		1,600U		330U		330U	
4-Methylphenol		330U		660U		660U		660U		1,600U		330U		330U	
Naphthalene		330U		660U		660U		660U		1,600U		330U		330U	
2-Nitroaniline		330U		660U		660U		660U		1,600U		330U		330U	
3-Nitroaniline		800U		1,600U		1,600U		1,600U		4,000U		800U		800U	
4-Nitroaniline		800U		1,600U		1,600U		1,600U		4,000U		800U		800U	
Nitrobenzene		330U		660U		660U		660U		1,600U		330U		330U	
2-Nitrophenol		330U		660U		660U		660U		1,600U		330U		330U	
4-Nitrophenol		800U		1,600U		1,600U		1,600U		4,000U		800U		800U	
N-Nitrosodiphenylamine (1)		330U		660U		660U		660U		1,600U		330U		330U	
N-Nitroso-Di-n-Propylamine		330U		660U		660U		660U		1,600U		330U		330U	
Di-n-Octyl Phthalate		330U		660U		660U		660U		1,600U		330U		330U	
Pentachlorophenol		800U		1,600U		1,600U		1,600U		4,000U		800U		800U	
Phenanthrene		330U		660U		660U		660U		1,600U		330U		330U	
Phenol		330U		660U		660U		660U		1,600U		330U		330U	
Pyrene		330U		660U		660U		660U		1,600U		330U		330U	
Pyridine		330U		660U		660U		660U		1,600U		330U		330U	
1,2,4-Trichlorobenzene		330U		660U		660U		660U		1,600U		330U		330U	
2,4,5-Trichlorophenol		800U		1,600U		1,600U		1,600U		4,000U		800U		800U	
2,4,6-Trichlorophenol		330U		660U		660U		660U		1,600U		330U		330U	
<b>TPH (mg/kg)</b>		<b>17</b>		<b>300</b>		<b>110</b>		<b>22</b>		<b>7,700</b>		<b>270</b>		<b>22</b>	

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons

BH - Borehole  
DUP - Duplicate

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram



**Table J.1**  
**Analytical Results of Soil Samples Collected from Site 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	017-017 BH-2.0-2.5 7/19/94 9407703-13	017-017 BH-5.0-5.5 7/19/94 9407703-14	017-017 BH-9.0-9.5 7/19/94 9407703-15	017-018 BH-1.5-2.0 7/20/94 9407813-02	017-018 BH-5.0-5.5 7/20/94 9407813-03	017-018 BH-5.0-5.5 DUP 7/20/94 9407813-04	017-018 BH-9.0-9.5 7/20/94 9407813-05
Analyte	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SVOCs (ug/kg)	330U	330U	330U	330U	660U	1,600U	330U
Acenaphthene	330U	330U	330U	330U	660U	1,600U	330U
Acenaphthylene	330U	330U	330U	330U	660U	1,600U	330U
Aniline	330U	330U	330U	330U	660U	1,600U	330U
Anthracene	330U	330U	330U	330U	660U	1,600U	330U
Benzo (a) Anthracene	330U	330U	330U	330U	660U	1,600U	330U
Benzo (b) Fluoranthene	330U	330U	330U	330U	660U	1,600U	330U
Benzo (k) Fluoranthene	330U	330U	330U	330U	660U	1,600U	330U
Benzo (a) Pyrene	330U	330U	330U	330U	660U	1,600U	330U
Benzoic Acid	1,600U	1,600U	1,600U	1,600U	3,200U	8,000U	1,600U
Benzo(g,h,i)Perylene	330U	330U	330U	330U	660U	1,600U	330U
Benzyl alcohol	330U	330U	330U	330U	660U	1,600U	330U
4-Bromophenylphenyl ether	330U	330U	330U	330U	660U	1,600U	330U
Butylbenzylphthalate	330U	330U	330U	330U	660U	1,600U	330U
di-n-Butyl phthalate	330U	330U	330U	330U	660U	1,600U	330U
Carbazole	330U	330U	330U	330U	660U	1,600U	330U
4-Chloroaniline	330U	330U	330U	330U	660U	1,600U	330U
bis(2-Chloroethoxy)Methane	330U	330U	330U	330U	660U	1,600U	330U
bis(2-Chloroethyl)Ether	330U	330U	330U	330U	660U	1,600U	330U
bis(2-Chloroisopropyl)Ether	330U	330U	330U	330U	660U	1,600U	330U
4-Chloro-3-Methylphenol	330U	330U	330U	330U	660U	1,600U	330U
2-Chloronaphthalene	330U	330U	330U	330U	660U	1,600U	330U
2-Chlorophenol	330U	330U	330U	330U	660U	1,600U	330U
4-Chlorophenylphenyl ether	330U	330U	330U	330U	660U	1,600U	330U
Chrysene	330U	330U	330U	330U	660U	1,600U	330U
Dibenz(a,h)Anthracene	330U	330U	330U	330U	660U	1,600U	330U
Dibenzofuran	330U	330U	330U	330U	660U	1,600U	330U
1,2-Dichlorobenzene	330U	330U	330U	330U	660U	1,600U	330U
1,3-Dichlorobenzene	330U	330U	330U	330U	660U	1,600U	330U
1,4-Dichlorobenzene	330U	330U	330U	330U	660U	1,600U	330U
3,3'-Dichlorobenzidine	330U	330U	330U	330U	660U	1,600U	330U
2,4-Dichlorophenol	330U	330U	330U	330U	660U	1,600U	330U
Diethylphthalate	330U	330U	330U	330U	660U	1,600U	330U
2,4-Dimethylphenol	330U	330U	330U	330U	660U	1,600U	330U
Dimethyl Phthalate	330U	330U	330U	330U	660U	1,600U	330U

U - Indicates compound analyzed for but not detected  
SVOCs - Semi-volatile organic compounds  
TPH - Total petroleum hydrocarbons

BH - Borehole  
DUP - Duplicate

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.1**  
**Analytical Results of Soil Samples Collected from Site 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	017-017 BH-2.0-2.5 7/19/94 9407703-13	017-017 BH-5.0-5.5 7/19/94 9407703-14	017-017 BH-9.0-9.5 7/19/94 9407703-15	017-018 BH-1.5-2.0 7/20/94 9407813-02	017-018 BH-5.0-5.5 7/20/94 9407813-03	017-018 BH-5.0-5.5 DUP 7/20/94 9407813-04	017-018 BH-9.0-9.5 7/20/94 9407813-05
Analyte Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SVOC's (ug/kg)							
4,6-Dinitro-2-Methylphenol	800U	800U	800U	800U	1,600U	4,000U	800U
2,4-Dinitrophenol	800U	800U	800U	800U	1,600U	4,000U	800U
2,4-Dinitrotoluene	330U	330U	330U	330U	660U	1,600U	330U
2,6-Dinitrotoluene	330U	330U	330U	330U	660U	1,600U	330U
1,2-Diphenylhydrazine	330U	330U	330U	330U	660U	1,600U	330U
bis (2-Ethylhexyl) Phthalate	330U	820	330U	330U	660U	1,600U	330U
Fluoranthene	330U	330U	330U	600	660U	1,600U	330U
Fluorene	330U	330U	330U	330U	660U	1,600U	330U
Hexachlorobenzene	330U	330U	330U	330U	660U	1,600U	330U
Hexachlorobutadiene	330U	330U	330U	330U	660U	1,600U	330U
Hexachlorocyclopentadiene	330U	330U	330U	330U	660U	1,600U	330U
Indeno (1,2,3-cd) Pyrene	330U	330U	330U	330U	660U	1,600U	330U
Isophorone	330U	330U	330U	330U	660U	1,600U	330U
2-Methylnaphthalene	330U	330U	330U	330U	660U	1,600U	330U
2-Methylphenol	330U	330U	330U	330U	660U	1,600U	330U
4-Methylphenol	330U	330U	330U	330U	660U	1,600U	330U
Naphthalene	330U	330U	330U	330U	660U	1,600U	330U
2-Nitroaniline	330U	330U	330U	330U	660U	1,600U	330U
3-Nitroaniline	800U	800U	800U	800U	1,600U	4,000U	800U
4-Nitroaniline	800U	800U	800U	800U	1,600U	4,000U	800U
Nitrobenzene	330U	330U	330U	330U	660U	1,600U	330U
2-Nitrophenol	330U	330U	330U	330U	660U	1,600U	330U
4-Nitrophenol	800U	800U	800U	800U	1,600U	4,000U	800U
N-Nitrosodiphenylamine (1)	330U	330U	330U	330U	660U	1,600U	330U
N-Nitroso-Di-n-Propylamine	330U	330U	330U	330U	660U	1,600U	330U
Di-n-Octyl Phthalate	330U	330U	330U	330U	660U	1,600U	330U
Pentachlorophenol	800U	800U	800U	800U	1,600U	4,000U	800U
Phenanthrene	330U	330U	330U	470	660U	1,600U	330U
Phenol	330U	330U	330U	330U	660U	1,600U	330U
Pyrene	330U	330U	330U	460	660U	1,600U	330U
Pyridine	330U	330U	330U	330U	660U	1,600U	330U
1,2,4-Trichlorobenzene	330U	330U	330U	330U	660U	1,600U	330U
2,4,5-Trichlorophenol	800U	800U	800U	800U	1,600U	4,000U	800U
2,4,6-Trichlorophenol	330U	330U	330U	330U	660U	1,600U	330U
TPH (mg/kg)	140	210	110	260	250	27	12

U - Indicates compound analyzed for but not detected.

SVOC's - Semivolatile organic compounds

TPH - Total petroleum hydrocarbons

BH - Borehole

DUP - Duplicate

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

Table J.1  
Analytical Results of Soil Samples Collected from Site 17  
Minnesota Air National Guard Base  
Duluth, Minnesota

Analyte	017-019 BH-2.0-2.5		017-019 BH-5.0-5.5		017-019 BH-9.0-9.5		017-020 BH-1.5-2.0		017-020 BH-5.0-5.5		017-020 BH-9.0-9.5	
	Location No.: Sample Date: Lab Sample No.:	Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SVOCs (ug/kg)	7/20/94 9407813-06											
Acenaphthene	330U		330U		330U		330U		1,600U		330U	
Acenaphthylene	330U		330U		330U		330U		1,600U		330U	
Aniline	330U		330U		330U		330U		1,600U		330U	
Anthracene	330U		330U		330U		330U		1,600U		330U	
Benzo (a) Anthracene	330U		330U		330U		330U		1,600U		330U	
Benzo (b) Fluoranthene	330U		330U		330U		330U		1,600U		330U	
Benzo (k) Fluoranthene	330U		330U		330U		330U		1,600U		330U	
Benzo (a) Pyrene	330U		330U		330U		330U		1,600U		330U	
Benzoic Acid	1,600U		1,600U		1,600U		1,600U		8,000U		1,600U	
Benzo(g,h,i)Perylene	330U		330U		330U		330U		1,600U		330U	
Benzyl alcohol	330U		330U		330U		330U		1,600U		330U	
4-Bromophenylphenyl ether	330U		330U		330U		330U		1,600U		330U	
Butylbenzylphthalate	330U		330U		330U		330U		1,600U		330U	
di-n-Butyl phthalate	330U		330U		330U		330U		1,600U		330U	
Carbazole	330U		330U		330U		330U		1,600U		330U	
4-Chloroaniline	330U		330U		330U		330U		1,600U		330U	
bis(2-Chloroethoxy)Methane	330U		330U		330U		330U		1,600U		330U	
bis(2-Chloroethyl)Ether	330U		330U		330U		330U		1,600U		330U	
bis(2-Chloroisopropyl)Ether	330U		330U		330U		330U		1,600U		330U	
4-Chloro-3-Methylphenol	330U		330U		330U		330U		1,600U		330U	
2-Chloronaphthalene	330U		330U		330U		330U		1,600U		330U	
2-Chlorophenol	330U		330U		330U		330U		1,600U		330U	
4-Chlorophenylphenyl ether	330U		330U		330U		330U		1,600U		330U	
Chrysene	330U		330U		330U		330U		1,600U		330U	
Dibenz(a,h)Anthracene	330U		330U		330U		330U		1,600U		330U	
Dibenzofuran	330U		330U		330U		330U		1,600U		330U	
1,2-Dichlorobenzene	330U		330U		330U		330U		1,600U		330U	
1,3-Dichlorobenzene	330U		330U		330U		330U		1,600U		330U	
1,4-Dichlorobenzene	330U		330U		330U		330U		1,600U		330U	
3,3'-Dichlorobenzidine	330U		330U		330U		330U		1,600U		330U	
2,4-Dichlorophenol	330U		330U		330U		330U		1,600U		330U	
Diethylphthalate	330U		330U		330U		330U		1,600U		330U	
2,4-Dimethylphenol	330U		330U		330U		330U		1,600U		330U	
Dimethyl Phthalate	330U		330U		330U		330U		1,600U		330U	

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons

BH - Borehole  
DUP - Duplicate

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.1**  
**Analytical Results of Soil Samples Collected from Site 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Analyte	Location No.: Sample Date: Lab Sample No.:	Matrix	017-019 BH-5.0-5.5		017-019 BH-9.0-9.5		017-020 BH-1.5-2.0		017-020 BH-5.0-5.5		017-020 BH-9.0-9.5	
			7/20/94	9407813-07	7/20/94	9407813-08	7/20/94	9407813-09	7/20/94	9407813-10	7/20/94	9407813-11
<b>SVOCs (ug/kg)</b>			Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
4,6-Dinitro-2-Methylphenol			800U		800U		800U		4,000U		800U	
2,4-Dinitrophenol			800U		800U		800U		4,000U		800U	
2,4-Dinitrotoluene			330U		330U		330U		1,600U		330U	
2,6-Dinitrotoluene			330U		330U		330U		1,600U		330U	
1,2-Diphenylhydrazine			330U		330U		330U		1,600U		330U	
bis (2-Ethylhexyl) Phthalate			330U		330U		330U		1,600U		330U	
Fluoranthene			330U		330U		330U		1,600U		330U	
Fluorene			330U		330U		330U		1,600U		330U	
Hexachlorobenzene			330U		330U		330U		1,600U		330U	
Hexachlorobutadiene			330U		330U		330U		1,600U		330U	
Hexachloroethane			330U		330U		330U		1,600U		330U	
Hexachlorocyclopentadiene			330U		330U		330U		1,600U		330U	
Indeno (1,2,3-cd) Pyrene			330U		330U		330U		1,600U		330U	
Isophorone			330U		330U		330U		1,600U		330U	
2-Methylnaphthalene			330U		330U		330U		1,600U		330U	
2-Methylphenol			330U		330U		330U		1,600U		330U	
4-Methylphenol			330U		330U		330U		1,600U		330U	
Naphthalene			330U		330U		330U		1,600U		330U	
2-Nitroaniline			330U		330U		330U		1,600U		330U	
3-Nitroaniline			800U		800U		800U		4,000U		800U	
4-Nitroaniline			800U		800U		800U		4,000U		800U	
Nitrobenzene			330U		330U		330U		1,600U		330U	
2-Nitrophenol			330U		330U		330U		1,600U		330U	
4-Nitrophenol			800U		800U		800U		4,000U		800U	
N-Nitrosodiphenylamine (1)			330U		330U		330U		1,600U		330U	
N-Nitroso-Di-n-Propylamine			330U		330U		330U		1,600U		330U	
Di-n-Octyl Phthalate			330U		330U		330U		1,600U		330U	
Pentachlorophenol			800U		800U		800U		4,000U		800U	
Phenanthrene			330U		330U		330U		1,600U		330U	
Phenol			330U		330U		330U		1,600U		330U	
Pyrene			330U		330U		330U		1,600U		330U	
Pyridine			330U		330U		330U		1,600U		330U	
1,2,4-Trichlorobenzene			330U		330U		330U		1,600U		330U	
2,4,5-Trichlorophenol			800U		800U		800U		4,000U		800U	
2,4,6-Trichlorophenol			330U		330U		330U		1,600U		330U	
<b>TPH (mg/kg)</b>			99	10U	14	24	110	29				

U - Indicates compound analyzed for but not detected  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons

BH - Borehole  
DUP - Duplicate

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.2**  
**Analytical Results of Soil Samples Collected from Site 18**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	018-006BH2-0.8-1.3 10/5/94 9410180-04	018-006BH2-1.3-1.7 10/5/94 9410180-05	018-006BH2-2.1-2.5 10/5/94 9410180-06	018-007BH2-1.3-1.7 10/5/94 9410180-01	018-007BH2-1.3-1.7 10/5/94 9410180-02	018-007BH2-2.1-2.5 10/5/94 9410180-03
VOCs (ug/kg) Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Acetone	10U	10U	10U	10U	50U	50U
Benzene	5U	5U	5U	5U	25U	25U
Bromodichloromethane	5U	5U	5U	5U	25U	25U
Bromoform	5U	5U	5U	5U	25U	25U
Bromomethane	10U	10U	10U	10U	50U	50U
2-Butanone	20U	20U	20U	20U	100U	100U
Carbon Disulfide	5U	5U	5U	5U	25U	25U
Carbon Tetrachloride	5U	5U	5U	5U	25U	25U
Chlorobenzene	5U	5U	5U	5U	25U	25U
Chloroethane	10U	10U	10U	10U	50U	50U
2-Chloroethylvinylether	10U	10U	10U	10U	50U	50U
Chloroform	5U	5U	5U	5U	25U	25U
Chloromethane	10U	10U	10U	10U	50U	50U
Dibromochloromethane	5U	5U	5U	5U	25U	25U
1,1-Dichloroethane	5U	5U	5U	5U	25U	25U
1,1-Dichloroethene	5U	5U	5U	5U	25U	25U
1,2-Dichloroethane	5U	5U	5U	5U	25U	25U
total -1,2-Dichloroethene	5U	5U	5U	5U	25U	25U
1,2-Dichloropropane	5U	5U	5U	5U	25U	25U
cis-1,3-Dichloropropene	5U	5U	5U	5U	25U	25U
trans-1,3-Dichloropropene	5U	5U	5U	5U	25U	25U
Ethylbenzene	5U	5U	5U	5U	25U	25U
2-Hexanone	10U	10U	10U	10U	50U	50U
Methylene Chloride	5U	5U	5U	5U	25U	25U
4-Methyl-2-Pentanone	10U	10U	10U	10U	50U	50U
Styrene	5U	5U	5U	5U	25U	25U
1,1,2,2-Tetrachloroethane	5U	5U	5U	5U	25U	25U
Tetrachloroethene	5U	5U	5U	5U	25U	25U
Toluene	5U	5U	5U	5U	25U	25U
1,1,1-Trichloroethane	5U	5U	5U	5U	25U	25U
1,1,2-Trichloroethane	5U	5U	5U	5U	25U	25U
Trichloroethene	5U	5U	5U	5U	25U	25U
Trichlorofluoromethane	5U	5U	5U	5U	25U	25U
Vinyl Acetate	10U	10U	10U	10U	50U	50U
Vinyl Chloride	10U	10U	10U	10U	50U	50U
Xylenes (total)	5U	5U	5U	5U	25U	74

U - Indicates compound analyzed for but not detected.  
VOCs - Volatile organic compounds

ug/kg - micrograms per kilogram

BH - Borehole  
DUP - Duplicate

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-017 BH-6.0-6.5 DUP 7/15/94 9407612-03	021-017 BH-14.0-14.5 7/15/94 9407612-04	021-018 BH-1.5-2.0 7/14/94 9407566-05	021-018 BH-10.0-10.5 7/14/94 9407566-06	021-018 BH-14.0-14.5 7/14/94 9407566-07	021-018 BH-14.0-14.5 DUP 7/14/94 9407566-08
VOCs (ug/kg) Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Acetone	10U	10U	10U	10U	10U	10U
Benzene	5U	5U	5U	5U	5U	5U
Bromodichloromethane	5U	5U	5U	5U	5U	5U
Bromoform	5U	5U	5U	5U	5U	5U
Bromomethane	10U	10U	10U	10U	10U	10U
2-Butanone	20U	20U	20U	20U	20U	20U
Carbon Disulfide	5U	5U	5U	5U	5U	5U
Carbon Tetrachloride	5U	5U	5U	5U	5U	5U
Chlorobenzene	5U	5U	5U	5U	5U	5U
Chloroethane	10U	10U	10U	10U	10U	10U
2-Chloroethylvinylether	10U	10U	10U	10U	10U	10U
Chloroform	5U	5U	5U	5U	5U	5U
Chloromethane	10U	10U	10U	10U	10U	10U
Dibromochloromethane	5U	5U	5U	5U	5U	5U
1,1-Dichloroethane	5U	5U	5U	5U	5U	5U
1,1-Dichloroethene	5U	5U	5U	5U	5U	5U
1,2-Dichloroethane	5U	5U	5U	5U	5U	5U
total 1,2-Dichloroethene	5U	5U	5U	5U	5U	5U
1,2-Dichloropropane	5U	5U	5U	5U	5U	5U
cis-1,3-Dichloropropene	5U	5U	5U	5U	5U	5U
trans-1,3-Dichloropropene	5U	5U	5U	5U	5U	5U
Ethylbenzene	5U	5U	5U	5U	5U	5U
2-Hexanone	10U	10U	10U	10U	10U	10U
Methylene Chloride	5U	5U	5U	5U	5U	5U
4-Methyl-2-Pentanone	10U	10U	10U	10U	10U	10U
Styrene	5U	5U	5U	5U	5U	5U
1,1,2,2-Tetrachloroethane	5U	5U	5U	5U	5U	5U
Tetrachloroethene	5U	5U	5U	5U	5U	5U
Toluene	5U	5U	5U	5U	5U	5U
1,1,1-Trichloroethane	5U	5U	5U	5U	5U	5U
1,1,2-Trichloroethane	5U	5U	5U	5U	5U	5U
Trichloroethene	5U	5U	5U	5U	5U	5U
Trichlorofluoromethane	5U	5U	5U	5U	5U	5U
Vinyl Acetate	10U	10U	10U	10U	10U	10U
Vinyl Chloride	10U	10U	10U	10U	10U	10U
Xylenes (total)	5U	5U	5U	5U	5U	5U

U - Indicates compound analyzed for but not detected.

VOCs - Volatile organic compounds

DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

Table J.3  
Analytical Results of Soil Samples Collected from Site 21  
Minnesota Air National Guard Base  
Duluth, Minnesota

SVOCs (ug/kg)	Matrix	Location No.: 021-017 BH-6.0-6.5 DUP		021-017 BH-14.0-14.5		021-018 BH-1.5-2.0		021-018 BH-10.0-10.5		021-018 BH-14.0-14.5		021-018 BH-14.0-14.5 DUP	
		Sample Date: 7/15/94	9407612-03	7/15/94	9407612-04	7/14/94	9407566-05	7/14/94	9407566-06	7/14/94	9407566-07	7/14/94	9407566-08
Acenaphthene		330U		330U		330U		330U		330U		330U	
Acenaphthylene		330U		330U		660U		330U		330U		330U	
Aniline		330U		330U		660U		330U		330U		330U	
Anthracene		330U		330U		1,900		330U		330U		330U	
Benzo (a) Anthracene		330U		330U		6,400		330U		330U		330U	
Benzo (b) Fluoranthene		330U		330U		9,300		330U		330U		330U	
Benzo (k) Fluoranthene		330U		330U		4,800		330U		330U		330U	
Benzo (a) Pyrene		330U		330U		5,500		330U		330U		330U	
Benzoic Acid		1,600U		1,600U		3,200U		1,600U		1,600U		1,600U	
Benzofg,h,i)Perylene		330U		330U		3,500		330U		330U		330U	
Benzyl alcohol		330U		330U		660U		330U		330U		330U	
4-Bromophenylphenyl ether		330U		330U		660U		330U		330U		330U	
Butylbenzylphthalate		330U		330U		660U		330U		330U		330U	
di-n-Butyl phthalate		330U		330U		660U		330U		330U		330U	
Carbazole		330U		330U		1,500		330U		330U		330U	
4-Chloroaniline		330U		330U		660U		330U		330U		330U	
bis(2-Chloroethoxy)Methane		330U		330U		660U		330U		330U		330U	
bis(2-Chloroethyl)Ether		330U		330U		660U		330U		330U		330U	
bis(2-Chloroisopropyl)Ether		330U		330U		660U		330U		330U		330U	
4-Chloro-3-Methylphenol		330U		330U		660U		330U		330U		330U	
2-Chloronaphthalene		330U		330U		660U		330U		330U		330U	
2-Chlorophenol		330U		330U		660U		330U		330U		330U	
4-Chlorophenylphenyl ether		330U		330U		660U		330U		330U		330U	
Chrysene		330U		330U		7,000		330U		330U		330U	
Dibenz(a,h)Anthracene		330U		330U		660U		330U		330U		330U	
Dibenzofuran		330U		330U		660U		330U		330U		330U	
1,2-Dichlorobenzene		330U		330U		660U		330U		330U		330U	
1,3-Dichlorobenzene		330U		330U		660U		330U		330U		330U	
1,4-Dichlorobenzene		330U		330U		660U		330U		330U		330U	
3,3'-Dichlorobenzidine		330U		330U		660U		330U		330U		330U	
2,4-Dichlorophenol		330U		330U		660U		330U		330U		330U	
Diethylphthalate		330U		330U		660U		330U		330U		330U	
2,4-Dimethylphenol		330U		330U		660U		330U		330U		330U	
Dimethyl Phthalate		330U		330U		660U		330U		330U		330U	

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/kg)	Matrix	Location No.: Sample Date: Lab Sample No.:	021-017 BH-6.0-6.5 DUP 7/15/94 9407612-03	021-017 BH-14.0-14.5 7/15/94 9407612-04	021-018 BH-1.5-2.0 7/14/94 9407566-05	021-018 BH-10.0-10.5 7/14/94 9407566-06	021-018 BH-14.0-14.5 7/14/94 9407566-07	021-018 BH-14.0-14.5 DUP 7/14/94 9407566-08
4,6-Dinitro-2-Methylphenol	Soil		800U	800U	1,600U	800U	800U	800U
2,4-Dinitrophenol	Soil		800U	800U	1,600U	800U	800U	800U
2,4-Dinitrotoluene	Soil		330U	330U	660U	330U	330U	330U
2,6-Dinitrotoluene	Soil		330U	330U	660U	330U	330U	330U
1,2-Diphenylhydrazine	Soil		330U	330U	660U	330U	330U	330U
bis (2-Ethylhexyl) Phthalate	Soil		330U	330U	660U	330U	330U	330U
Fluoranthene	Soil		330U	330U	14,000	330U	330U	330U
Fluorene	Soil		330U	330U	920	330U	330U	330U
Hexachlorobenzene	Soil		330U	330U	660U	330U	330U	330U
Hexachlorobutadiene	Soil		330U	330U	660U	330U	330U	330U
Hexachlorocyclopentadiene	Soil		330U	330U	660U	330U	330U	330U
Indeno (1,2,3-cd) Pyrene	Soil		330U	330U	3,900	330U	330U	330U
Isophorone	Soil		330U	330U	660U	330U	330U	330U
2-Methylnaphthalene	Soil		330U	330U	660U	330U	330U	330U
2-Methylphenol	Soil		330U	330U	660U	330U	330U	330U
4-Methylphenol	Soil		330U	330U	660U	330U	330U	330U
Naphthalene	Soil		330U	330U	660U	330U	330U	330U
2-Nitroaniline	Soil		800U	800U	1,600U	800U	800U	800U
3-Nitroaniline	Soil		800U	800U	1,600U	800U	800U	800U
4-Nitroaniline	Soil		800U	800U	1,600U	800U	800U	800U
Nitrobenzene	Soil		330U	330U	660U	330U	330U	330U
2-Nitrophenol	Soil		330U	330U	660U	330U	330U	330U
4-Nitrophenol	Soil		800U	800U	1,600U	800U	800U	800U
N-Nitrosodiphenylamine (1)	Soil		330U	330U	660U	330U	330U	330U
N Nitroso Di-n-Propylamine	Soil		330U	330U	660U	330U	330U	330U
Di-n-Octyl Phthalate	Soil		330U	330U	660U	330U	330U	330U
Pentachlorophenol	Soil		800U	800U	1,600U	800U	800U	800U
Phenanthrene	Soil		330U	330U	660U	330U	330U	330U
Phenol	Soil		330U	330U	8,800	330U	330U	330U
Pyrene	Soil		330U	330U	660U	330U	330U	330U
Pyridine	Soil		330U	330U	12,000	330U	330U	330U
1,2,4-Trichlorobenzene	Soil		330U	330U	660U	330U	330U	330U
2,4,5-Trichlorophenol	Soil		800U	800U	1,600U	800U	800U	800U
2,4,6-Trichlorophenol	Soil		330U	330U	660U	330U	330U	330U

U - Indicates compound analyzed for but not detected.

SVOCs - Semivolatile organic compounds

DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram



**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-017 BH-6.0-6.5 DUP 7/15/94 9407612-03	021-017 BH-14.0-14.5 7/15/94 9407612-04	021-018 BH-1.5-2.0 7/14/94 9407566-05	021-018 BH-10.0-10.5 7/14/94 9407566-06	021-018 BH-14.0-14.5 7/14/94 9407566-07	021-018 BH-14.0-14.5 DUP 7/14/94 9407566-08
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
TPH (mg/kg)	10U	22	125	15	28	13
Pesticides/PCBs (ug/kg)						
a-BHC	0.67U	0.67U	0.67U	0.67U	0.67U	0.67U
b-BHC	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
d-BHC	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
g-BHC	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Heptachlor	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Aldrin	0.67U	0.67U	0.67U	0.67U	0.67U	0.67U
Heptachlor Epoxide	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
Endosulfan I	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
Dieldrin	0.33U	0.33U	0.33U	0.33U	0.33U	0.33U
Endrin	1.3U	1.3U	1.3U	1.3U	1.3U	1.3U
Endosulfan II	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
4,4'-DDT	2.3U	2.3U	2.3U	2.3U	2.3U	2.3U
Endrin Aldehyde	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
Methoxychlor	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
a-Chlordane	0.33U	0.33U	0.33U	0.33U	0.33U	0.33U
g-Chlordane	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
1,4'-DDE	0.67U	0.67U	0.67U	0.67U	0.67U	0.67U
1,4'-DDD	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
Endosulfan Sulfate	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
Endrin Ketone	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
Toxaphene	33U	33U	33U	33U	33U	33U

U - Indicates compound analyzed for but not detected  
BH - Borehole  
DUP - Duplicate

TPH - Total petroleum hydrocarbons  
PCBs - Polychlorinated biphenyls

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-017 BH-6.0-6.5 DUP		021-017 BH-14.0-14.5		021-018 BH-1.5-2.0		021-018 BH-10.0-10.5		021-018 BH-14.0-14.5		021-018 BH-14.0-14.5 DUP	
	7/15/94 9407612-03		7/15/94 9407612-04		7/14/94 9407566-05		7/14/94 9407566-06		7/14/94 9407566-07		7/14/94 9407566-08	
Matrix	Soil		Soil		Soil		Soil		Soil		Soil	
<b>Pesticides/PCBs (ug/kg)</b>												
Chlordane (technical)	1.7U		1.7U		1.7U		1.7U		1.7U		1.7U	
PCB-1016	17U		17U		17U		17U		17U		17U	
PCB-1221	17U		17U		17U		17U		17U		17U	
PCB-1232	17U		17U		17U		17U		17U		17U	
PCB-1242	17U		17U		17U		17U		17U		17U	
PCB-1248	17U		17U		17U		17U		17U		17U	
PCB-1260	17U		17U		17U		17U		17U		17U	
<b>Metals (mg/kg)</b>												
Silver	3U		3U		3U		3U		3U		3U	
Aluminum	10,300		6,760		8,680		11,000		9,180		8,510	
Arsenic	1		1U		1U		1		1		1U	
Beryllium	2U		2U		2U		2U		2U		2U	
Cadmium	0.8U		0.8U		0.8U		0.8U		0.8U		0.8U	
Chromium	21		9		29		22		14		13	
Copper	64.4		31.2		40.8		69.2		41.0		77.9	
Mercury	0.1U		0.1U		0.1U		0.1U		0.1U		0.1U	
Nickel	25		13		27		24		20		17	
Lead	3.1		1.7		16		2.6		2.6		2.4	
Antimony	1U		1U		1U		1U		1U		1U	
Selenium	0.8U		0.8U		0.8U		0.8U		0.8U		0.8U	
Thallium	0.4U		0.4U		0.4U		0.4U		0.4U		0.4U	
Zinc	47		27		55		46		36		54	

U - Indicates compound analyzed for but not detected.  
BH - Borehole  
DUP - Duplicate

TPH - Total petroleum hydrocarbons  
PCBs - Polychlorinated biphenyls

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

VOCs (ug/kg)	Matrix	021-015 BH-1.5-2.0		021-015 BH-6.0-6.5		021-016 BH-1.5-2.0		021-016 BH-6.0-6.5		021-017 BH-1.5-2.0		021-017 BH-6.0-6.5	
		Lab Sample No.: 7/14/94 9407566-01	Soil	Lab Sample No.: 7/14/94 9407566-02	Soil	Lab Sample No.: 7/14/94 9407566-03	Soil	Lab Sample No.: 7/14/94 9407566-04	Soil	Lab Sample No.: 7/14/94 9407612-01	Soil	Lab Sample No.: 7/15/94 9407612-02	Soil
Acetone		10U		10U		10U		13		10U		10U	
Benzene		5U		5U		5U		5U		5U		5U	
Bromodichloromethane		5U		5U		5U		5U		5U		5U	
Bromoform		5U		5U		5U		5U		5U		5U	
Bromomethane		10U		10U		10U		10U		10U		10U	
2-Butanone		20U		20U		20U		20U		20U		20U	
Carbon Disulfide		5U		5U		5U		5U		5U		5U	
Carbon Tetrachloride		5U		5U		5U		5U		5U		5U	
Chlorobenzene		5U		5U		5U		5U		5U		5U	
Chloroethane		10U		10U		10U		10U		10U		10U	
2-Chloroethylvinylether		10U		10U		10U		10U		10U		10U	
Chloroform		5U		5U		5U		5U		5U		5U	
Chloromethane		10U		10U		10U		10U		10U		10U	
Dibromochloromethane		5U		5U		5U		5U		5U		5U	
1,1,1-Trichloroethane		5U		5U		5U		5U		5U		5U	
1,1,1-Dichloroethane		5U		5U		5U		5U		5U		5U	
1,2-Dichloroethane		5U		5U		5U		5U		5U		5U	
total - 1,2-Dichloroethane		5U		5U		5U		5U		5U		5U	
1,2-Dichloropropane		5U		5U		5U		5U		5U		5U	
cis-1,3-Dichloropropene		5U		5U		5U		5U		5U		5U	
trans-1,3-Dichloropropene		5U		5U		5U		5U		5U		5U	
Ethylbenzene		5U		5U		5U		5U		5U		5U	
2-Hexanone		10U		10U		10U		10U		10U		10U	
Methylene Chloride		5U		5U		5U		5U		5U		5U	
4-Methyl-2-Pentanone		10U		10U		10U		10U		10U		10U	
Styrene		5U		5U		5U		5U		5U		5U	
1,1,2,2-Tetrachloroethane		5U		5U		5U		5U		5U		5U	
Tetrachloroethene		5U		5U		5U		5U		5U		5U	
Toluene		5U		5U		5U		5U		5U		5U	
1,1,1-Trichloroethane		5U		5U		5U		5U		5U		5U	
1,1,2-Trichloroethane		5U		5U		5U		5U		5U		5U	
Trichloroethene		5U		5U		5U		5U		5U		5U	
Trichlorofluoromethane		5U		5U		5U		5U		5U		5U	
Vinyl Acetate		10U		10U		10U		10U		10U		10U	
Vinyl Chloride		10U		10U		10U		10U		10U		10U	
Xylenes (total)		5U		5U		5U		5U		5U		5U	

U - Indicates compound analyzed for but not detected.  
VOCs - Volatile organic compounds  
DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/kg)	Location No.:		021-015 BH-1.5-2.0		021-015 BH-6.0-6.5		021-016 BH-1.5-2.0		021-016 BH-6.0-6.5		021-017 BH-1.5-2.0		021-017 BH-6.0-6.5	
	Matrix	Sample Date:	7/14/94	Soil	7/14/94	Soil	7/14/94	Soil	7/14/94	Soil	7/15/94	Soil	7/15/94	Soil
Lab Sample No.:			9407566-01		9407566-02		9407566-03		9407566-04		9407612-01		9407612-02	
Acenaphthene			330U		330U		660U		330U		330U		330U	
Acenaphthylene			330U		330U		660U		330U		330U		330U	
Aniline			330U		330U		660U		330U		330U		330U	
Anthracene			330U		330U		660U		330U		330U		330U	
Benzo (a) Anthracene			330U		330U		660U		330U		330U		330U	
Benzo (b) Fluoranthene			330U		330U		660U		330U		330U		330U	
Benzo (k) Fluoranthene			330U		330U		660U		330U		330U		330U	
Benzo (a) Pyrene			330U		330U		660U		330U		330U		330U	
Benzoic Acid			1,600U		1,600U		3,200U		1,600U		1,600U		1,600U	
Benzo(g,h,i)Perylene			330U		330U		660U		330U		330U		330U	
Benzyl alcohol			330U		330U		660U		330U		330U		330U	
4-Bromophenylphenyl ether			330U		330U		660U		330U		330U		330U	
Butylbenzylphthalate			330U		330U		660U		330U		330U		330U	
di-n-Butyl phthalate			330U		330U		660U		330U		330U		330U	
Carbazole			330U		330U		660U		330U		330U		330U	
4-Chloroaniline			330U		330U		660U		330U		330U		330U	
bis(2-Chloroethoxy)Methane			330U		330U		660U		330U		330U		330U	
bis(2-Chloroethyl)Ether			330U		330U		660U		330U		330U		330U	
bis(2-Chloroisopropyl)Ether			330U		330U		660U		330U		330U		330U	
4-Chloro-3-Methylphenol			330U		330U		660U		330U		330U		330U	
2-Chloronaphthalene			330U		330U		660U		330U		330U		330U	
2-Chlorophenol			330U		330U		660U		330U		330U		330U	
4-Chlorophenylphenyl ether			330U		330U		660U		330U		330U		330U	
Chrysene			330U		330U		660U		330U		330U		330U	
Dibenz(a,h)Anthracene			330U		330U		660U		330U		330U		330U	
Dibenzofuran			330U		330U		660U		330U		330U		330U	
1,2-Dichlorobenzene			330U		330U		660U		330U		330U		330U	
1,3-Dichlorobenzene			330U		330U		660U		330U		330U		330U	
1,4-Dichlorobenzene			330U		330U		660U		330U		330U		330U	
3,3'-Dichlorobenzidine			330U		330U		660U		330U		330U		330U	
2,4-Dichlorophenol			330U		330U		660U		330U		330U		330U	
Diethylphthalate			330U		330U		660U		330U		330U		330U	
2,4-Dimethylphenol			330U		330U		660U		330U		330U		330U	
Dimethyl Phthalate			330U		330U		660U		330U		330U		330U	

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/kg)	Location No.: Sample Date: Lab Sample No.:	021-015 BH-1.5-2.0 7/14/94 9407566-01	021-015 BH-6.0-6.5 7/14/94 9407566-02	021-016 BH-1.5-2.0 7/14/94 9407566-03	021-016 BH-6.0-6.5 7/14/94 9407566-04	021-017 BH-1.5-2.0 7/15/94 9407612-01	021-017 BH-6.0-6.5 7/15/94 9407612-02
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
4,6-Dinitro-2-Methylphenol	800U	800U	800U	1,600U	800U	800U	800U
2,4-Dinitrophenol	800U	800U	800U	1,600U	800U	800U	800U
2,4-Dinitrotoluene	330U	330U	330U	660U	330U	330U	330U
2,6-Dinitrotoluene	330U	330U	330U	660U	330U	330U	330U
1,2-Diphenylhydrazine	330U	330U	330U	660U	330U	330U	330U
bis (2-Ethylhexyl) Phthalate	330U	330U	330U	660U	330U	330U	330U
Fluoranthene	330U	330U	330U	660U	330U	330U	330U
Fluorene	330U	330U	330U	660U	330U	330U	330U
Hexachlorobenzene	330U	330U	330U	660U	330U	330U	330U
Hexachlorobutadiene	330U	330U	330U	660U	330U	330U	330U
Hexachloroethane	330U	330U	330U	660U	330U	330U	330U
Hexachlorocyclopentadiene	330U	330U	330U	660U	330U	330U	330U
Indeno (1,2,3-cd) Pyrene	330U	330U	330U	660U	330U	330U	330U
Isophorone	330U	330U	330U	660U	330U	330U	330U
2-Methylnaphthalene	330U	330U	330U	660U	330U	330U	330U
2-Methylphenol	330U	330U	330U	660U	330U	330U	330U
4-Methylphenol	330U	330U	330U	660U	330U	330U	330U
Naphthalene	330U	330U	330U	660U	330U	330U	330U
2-Nitroaniline	800U	800U	800U	1,600U	800U	800U	800U
3-Nitroaniline	800U	800U	800U	1,600U	800U	800U	800U
4-Nitroaniline	800U	800U	800U	1,600U	800U	800U	800U
Nitrobenzene	330U	330U	330U	660U	330U	330U	330U
2-Nitrophenol	330U	330U	330U	660U	330U	330U	330U
4-Nitrophenol	800U	800U	800U	1,600U	800U	800U	800U
N-Nitrosodiphenylamine (1)	330U	330U	330U	660U	330U	330U	330U
N-Nitroso-Di-n Propylamine	330U	330U	330U	660U	330U	330U	330U
Di-n Octyl Phthalate	330U	330U	330U	660U	330U	330U	330U
Pentachlorophenol	800U	800U	800U	1,600U	800U	800U	800U
Phenanthrene	330U	330U	330U	660U	330U	330U	330U
Phenol	330U	330U	330U	660U	330U	330U	330U
Pyrene	330U	330U	330U	660U	330U	330U	330U
Pyridine	330U	330U	330U	660U	330U	330U	330U
1,2,4-Trichlorobenzene	330U	330U	330U	660U	330U	330U	330U
2,4,5-Trichlorophenol	800U	800U	800U	1,600U	800U	800U	800U
2,4,6-Trichlorophenol	330U	330U	330U	660U	330U	330U	330U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-015 BH-1.5-2.0 7/14/94 9407566-01	021-015 BH-6.0-6.5 7/14/94 9407566-02	021-016 BH-1.5-2.0 7/14/94 9407566-03	021-016 BH-6.0-6.5 7/14/94 9407566-04	021-017 BH-1.5-2.0 7/15/94 9407612-01	021-017 BH-6.0-6.5 7/15/94 9407612-02
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
TPH (mg/kg)	16	15	67	100	86	14
Pesticides/PCBs (ug/kg)						
a-BHC	0.67U	0.67U	0.67U	0.67U	0.67U	0.67U
b-BHC	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
d-BHC	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
g-BHC	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Heptachlor	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Aldrin	0.67U	0.67U	0.67U	0.67U	0.67U	0.67U
Heptachlor Epoxide	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
Endosulfan I	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
Dieldrin	0.33U	0.33U	0.33U	0.33U	0.33U	0.33U
Endrin	1.3U	1.3U	1.3U	1.3U	1.3U	1.3U
Endosulfan II	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
4,4'-DDT	2.3U	2.3U	2.3U	2.3U	2.3U	2.3U
Endrin Aldehyde	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
Methoxychlor	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
a-Chlordane	0.33U	0.33U	0.33U	0.33U	0.33U	0.33U
g-Chlordane	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
4,4'-DDE	0.67U	0.67U	0.67U	0.67U	0.67U	0.67U
4,4'-DDD	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
Endosulfan Sulfate	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
Endrin Ketone	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
Toxaphene	33U	33U	33U	33U	33U	33U

U - Indicates compound analyzed for but not detected  
BH - Borehole  
DUP - Duplicate

TPH - Total petroleum hydrocarbons  
PCBs - Polychlorinated biphenyls

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-015 BH-1.5-2.0 7/14/94 9407566-01	021-015 BH-6.0-6.5 7/14/94 9407566-02	021-016 BH-1.5-2.0 7/14/94 9407566-03	021-016 BH-6.0-6.5 7/14/94 9407566-04	021-017 BH-1.5-2.0 7/15/94 9407612-01	021-017 BH-6.0-6.5 7/15/94 9407612-02
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
<b>Pesticides/PCBs (ug/kg)</b>						
Chlordane (technical)	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
PCB-1016	17U	17U	17U	17U	17U	17U
PCB-1221	17U	17U	17U	17U	17U	17U
PCB-1232	17U	17U	17U	17U	17U	17U
PCB-1242	17U	17U	17U	17U	17U	17U
PCB-1248	17U	17U	17U	17U	17U	17U
PCB-1260	17U	17U	17U	17U	17U	17U
<b>Metals (mg/kg)</b>						
Silver	3U	3U	3U	3U	3U	3U
Aluminum	11,400	14,400	8,550	10,500	10,800	11,400
Arsenic	1	2	1U	2	1U	1
Beryllium	2U	2U	2U	2U	2U	2U
Cadmium	0.8U	0.8U	0.8U	0.8U	0.8U	0.8U
Chromium	20	29	18	26	19	20
Copper	55.2	42.4	50.2	31.3	34.2	64.1
Mercury	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U
Nickel	27	19	25	14	19	25
Lead	3.7	4.3	6.9	3.1	3.9	2.7
Antimony	1U	1U	1U	1U	1U	1U
Selenium	0.8U	0.8U	0.8U	0.8U	0.8U	0.8U
Thallium	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U
Zinc	52	37	30	25	35	41

U - Indicates compound analyzed for but not detected.

BH - Borehole

DUP - Duplicate

TPH - Total petroleum hydrocarbons

PCBs - Polychlorinated biphenyls

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.: VOCs (ug/kg)	021-019 BH-1.0-1.5 7/14/94 9407566-09	021-019 BH-6.0-6.5 7/14/94 9407566-10	021-019 BH-10.0-10.5 7/14/94 9407566-11	021-019 BH-14.0-14.5 7/14/94 9407567-12	021-020 BH-1.5-2.0 7/13/94 9407473-09	021-020 BH-6.0-6.5 7/13/94 9407473-10
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Acetone	10U	10U	10U	10U	10U	85
Benzene	5U	5U	17	8	5U	140
Bromodichloromethane	5U	5U	5U	5U	5U	5U
Bromoform	5U	5U	5U	5U	5U	5U
Bromomethane	10U	10U	10U	10U	10U	10U
2-Butanone	20U	20U	20U	20U	20U	31
Carbon Disulfide	5U	5U	5U	5U	5U	5U
Carbon Tetrachloride	5U	5U	5U	5U	5U	5U
Chlorobenzene	5U	5U	5U	5U	5U	5U
Chloroethane	10U	10U	10U	10U	10U	10U
2-Chloroethylvinylether	10U	10U	10U	10U	10U	10U
Chloroform	10U	10U	10U	10U	10U	10U
Chloromethane	5U	5U	5U	5U	5U	5U
Dibromochloromethane	5U	5U	5U	5U	5U	5U
1,1-Dichloroethane	5U	5U	5U	5U	5U	5U
1,1,1-Dichloroethane	5U	5U	5U	5U	5U	5U
1,2-Dichloroethane	5U	5U	5U	5U	5U	54
total -1,2-Dichloroethane	5U	5U	5U	5U	5U	5U
1,2-Dichloropropane	5U	5U	5U	5U	5U	5U
cis-1,3-Dichloropropene	5U	5U	5U	5U	5U	5U
trans-1,3-Dichloropropene	5U	5U	5U	5U	5U	5U
Ethylbenzene	5U	5U	5U	5U	5U	5U
2-Hexanone	10U	10U	10U	10U	10U	10U
Methylene Chloride	5U	5U	5U	5U	5U	5U
4-Methyl-2-Pentanone	10U	10U	10U	10U	10U	10U
Styrene	5U	5U	5U	5U	5U	5U
1,1,2,2-Tetrachloroethane	5U	5U	5U	5U	5U	5U
Tetrachloroethene	5U	5U	5U	5U	5U	5U
Toluene	5U	5U	5U	5U	5U	14
1,1,1-Trichloroethane	5U	5U	5U	5U	5U	5U
1,1,2-Trichloroethane	5U	5U	5U	5U	5U	5U
Trichloroethene	5U	5U	5U	5U	5U	5U
Trichlorofluoromethane	5U	5U	5U	5U	5U	5U
Vinyl Acetate	10U	10U	10U	10U	10U	10U
Vinyl Chloride	10U	10U	10U	10U	10U	10U
Xylenes (total)	5U	5U	5U	5U	5U	5U

U - Indicates compound analyzed for but not detected.

VOCs - Volatile organic compounds

DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram



**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/kg)	Location No.: 021-019 BH-1.0-1.5		021-019 BH-6.0-6.5		021-019 BH-10.0-10.5		021-019 BH-14.0-14.5		021-020 BH-1.5-2.0		021-020 BH-6.0-6.5	
	Matrix	Sample Date: 7/14/94	Lab Sample No.: 9407566-09	Soil	7/14/94	9407566-11	Soil	7/14/94	9407567-12	Soil	7/13/94	9407473-10
Acenaphthene		330U		330U		330U		330U		330U		330U
Acenaphthylene		330U		330U		330U		330U		330U		330U
Aniline		330U		330U		330U		330U		330U		330U
Anthracene		330U		330U		330U		330U		330U		330U
Benzo (a) Anthracene		330U		330U		330U		330U		330U		330U
Benzo (b) Fluoranthene		330U		330U		330U		330U		330U		330U
Benzo (k) Fluoranthene		330U		330U		330U		330U		330U		330U
Benzo (a) Pyrene		330U		330U		330U		330U		330U		330U
Benzoic Acid		1,600U		1,600U		1,600U		1,600U		1,600U		1,600U
Benzo(g,h,i)Perylene		330U		330U		330U		330U		330U		330U
Benzyl alcohol		330U		330U		330U		330U		330U		330U
4-Bromophenylphenyl ether		330U		330U		330U		330U		330U		330U
Butylbenzylphthalate		330U		330U		330U		330U		330U		330U
di-n-Butyl phthalate		330U		330U		330U		330U		330U		330U
Carbazole		330U		330U		330U		330U		330U		330U
4-Chloroaniline		330U		330U		330U		330U		330U		330U
bis(2-Chloroethoxy)Methane		330U		330U		330U		330U		330U		330U
bis(2-Chloroethyl)Ether		330U		330U		330U		330U		330U		330U
bis(2-Chloroisopropyl)Ether		330U		330U		330U		330U		330U		330U
4-Chloro-3-Methylphenol		330U		330U		330U		330U		330U		330U
2-Chloronaphthalene		330U		330U		330U		330U		330U		330U
2-Chlorophenol		330U		330U		330U		330U		330U		330U
4-Chlorophenylphenyl ether		330U		330U		330U		330U		330U		330U
Chrysene		330U		330U		330U		330U		330U		330U
Dibenz(a,h)Anthracene		330U		330U		330U		330U		330U		330U
Dibenzofuran		330U		330U		330U		330U		330U		330U
1,2-Dichlorobenzene		330U		330U		330U		330U		330U		330U
1,3-Dichlorobenzene		330U		330U		330U		330U		330U		330U
1,4-Dichlorobenzene		330U		330U		330U		330U		330U		330U
3,3'-Dichlorobenzidine		330U		330U		330U		330U		330U		330U
2,4-Dichlorophenol		330U		330U		330U		330U		330U		330U
Diethylphthalate		330U		330U		330U		330U		330U		330U
2,4-Dimethylphenol		330U		330U		330U		330U		330U		330U
Dimethyl Phthalate		330U		330U		330U		330U		330U		330U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/kg)	Location No.: Sample Date: Lab Sample No.:	021-019 BH-1.0-1.5 7/14/94 9407566-09	021-019 BH-6.0-6.5 7/14/94 9407566-10	021-019 BH-10.0-10.5 7/14/94 9407566-11	021-019 BH-14.0-14.5 7/14/94 9407566-12	021-020 BH-1.5-2.0 7/13/94 9407473-09	021-020 BH-6.0-6.5 7/13/94 9407473-10
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
4,6-Dinitro-2-Methylphenol	800U	800U	800U	800U	800U	800U	800U
2,4-Dinitrophenol	800U	800U	800U	800U	800U	800U	800U
2,4-Dinitrotoluene	330U	330U	330U	330U	330U	330U	330U
2,6-Dinitrotoluene	330U	330U	330U	330U	330U	330U	330U
1,2-Diphenylhydrazine	330U	330U	330U	330U	330U	330U	330U
bis (2-Ethylhexyl) Phthalate	330U	330U	330U	330U	330U	330U	330U
Fluoranthene	330U	330U	330U	330U	330U	330U	330U
Hexachlorobenzene	330U	330U	330U	330U	330U	330U	330U
Hexachlorobutadiene	330U	330U	330U	330U	330U	330U	330U
Hexachloroethane	330U	330U	330U	330U	330U	330U	330U
Hexachlorocyclopentadiene	330U	330U	330U	330U	330U	330U	330U
Indeno (1,2,3-cd) Pyrene	330U	330U	330U	330U	330U	330U	330U
Isophorone	330U	330U	330U	330U	330U	330U	330U
2-Methylnaphthalene	330U	330U	330U	330U	330U	330U	330U
2-Methylphenol	330U	330U	330U	330U	330U	330U	330U
4-Methylphenol	330U	330U	330U	330U	330U	330U	330U
Naphthalene	330U	330U	330U	330U	330U	330U	330U
2-Nitroaniline	800U	800U	800U	800U	800U	800U	800U
3-Nitroaniline	800U	800U	800U	800U	800U	800U	800U
4-Nitroaniline	800U	800U	800U	800U	800U	800U	800U
Nitrobenzene	330U	330U	330U	330U	330U	330U	330U
2-Nitrophenol	330U	330U	330U	330U	330U	330U	330U
3-Nitrophenol	800U	800U	800U	800U	800U	800U	800U
N-Nitrosodiphenylamine (1)	330U	330U	330U	330U	330U	330U	330U
N-Nitroso-Di-n-Propylamine	330U	330U	330U	330U	330U	330U	330U
Di-n-Octyl Phthalate	330U	330U	330U	330U	330U	330U	330U
Pentachlorophenol	800U	800U	800U	800U	800U	800U	800U
Phenanthrene	330U	330U	330U	330U	330U	330U	330U
Phenol	330U	330U	330U	330U	330U	330U	330U
Pyrene	330U	330U	330U	330U	330U	330U	330U
Pyridine	330U	330U	330U	330U	330U	330U	330U
1,2,4-Trichlorobenzene	330U	330U	330U	330U	330U	330U	330U
2,4,5-Trichlorophenol	800U	800U	800U	800U	800U	800U	800U
2,4,6-Trichlorophenol	330U	330U	330U	330U	330U	330U	330U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-019 BH-1.0-1.5 7/14/94 9407566-09	021-019 BH-6.0-6.5 7/14/94 9407566-10	021-019 BH-10.0-10.5 7/14/94 9407566-11	021-019 BH-14.0-14.5 7/14/94 9407567-12	021-020 BH-1.5-2.0 7/13/94 9407473-09	021-020 BH-6.0-6.5 7/13/94 9407473-10
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
TPH (mg/kg)	25	30	20	22	13	50
Pesticides/PCBs (ug/kg)						
a-BHC	0.67U	0.67U	0.67U	0.67U	0.67U	0.67U
b-BHC	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
d-BHC	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
g-BHC	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Heptachlor	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Aldrin	0.67U	0.67U	0.67U	0.67U	0.67U	0.67U
Heptachlor Epoxide	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
Endosulfan I	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
Dieldrin	0.33U	0.33U	0.33U	0.33U	0.33U	0.33U
Endosulfan II	1.3U	1.3U	1.3U	1.3U	1.3U	1.3U
4,4'-DDT	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Endrin Aldehyde	2.3U	2.3U	2.3U	2.3U	2.3U	2.3U
Methoxychlor	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
a-Chlordane	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
g-Chlordane	0.33U	0.33U	0.33U	0.33U	0.33U	0.33U
4,4'-DDE	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
4,4'-DDD	0.67U	0.67U	0.67U	0.67U	0.67U	0.67U
Endosulfan Sulfate	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
Endrin Ketone	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
Toxaphene	33U	33U	33U	33U	33U	33U

U - Indicates compound analyzed for but not detected  
BH - Borehole  
DUP - Duplicate

TPH - Total petroleum hydrocarbons  
PCBs - Polychlorinated biphenyls

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-019 BH-1.0-1.5		021-019 BH-6.0-6.5		021-019 BH-10.0-10.5		021-019 BH-14.0-14.5		021-020 BH-1.5-2.0		021-020 BH-6.0-6.5	
	7/14/94 9407566-09		7/14/94 9407566-10		7/14/94 9407566-11		7/14/94 9407567-12		7/13/94 9407473-09		7/13/94 9407473-10	
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
<b>Pesticides/PCBs (ug/kg)</b>												
Chlordane (technical)	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
PCB-1016	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U
PCB-1221	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U
PCB-1232	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U
PCB-1242	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U
PCB-1248	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U
PCB-1260	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U	17U
<b>Metals (mg/kg)</b>												
Silver	3U	3U	3U	3U	3U	3U	3U	3U	3U	3U	3U	3U
Aluminum	10,100	12,600	6,430	7,390	6,430	7,390	7,390	10,000	10,000	2,450	2,450	2,450
Arsenic	1	1	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Beryllium	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U	2U
Cadmium	0.8U	0.8U	0.8U	0.8U	0.8U	0.8U	0.8U	0.08	0.08	0.28	0.28	0.28
Chromium	22	24	15	11	15	11	11	10	10	2.8	2.8	2.8
Copper	53.9	56.5	43.1	54.3	43.1	54.3	54.3	34.5	34.5	15.6	15.6	15.6
Mercury	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U	0.1U
Nickel	21	25	18	18	18	18	18	17	17	6	6	6
Lead	3.1	4.0	2.3	2.7	2.3	2.7	2.7	2.3	2.3	3.6	3.6	3.6
Antimony	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U	1U
Selenium	0.8U	0.8U	0.8U	0.8U	0.8U	0.8U	0.8U	0.8U	0.8U	0.8U	0.8U	0.8U
Thallium	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U	0.4U
Zinc	44	48	67	49	67	49	49	30	30	23	23	23

U - Indicates compound analyzed for but not detected

BH - Borehole

DUP - Duplicate

TPH - Total petroleum hydrocarbons

PCBs - Polychlorinated biphenyls

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

Table J.3  
Analytical Results of Soil Samples Collected from Site 21  
Minnesota Air National Guard Base  
Duluth, Minnesota

Location No.: Sample Date: Lab Sample No.:	021-020 BH-14.0-14.5 7/13/94 9407473-11	021-021 BH-1.5-2.0 7/13/94 9407473-03	021-021 BH-11.0-11.5 7/13/94 9407473-04	021-021 BH-14.0-14.5 7/13/94 9407473-05	021-022 BH-1.5-2.0 7/12/94 9407405-01	021-022 BH-11.0-11.5 7/12/94 9407405-02
VOCs (ug/kg) Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Acetone	13	10U	10U	10U	10U	10U
Benzene	5U	5U	5U	47	5U	120
Bromodichloromethane	5U	5U	5U	5U	5U	5U
Bromoform	5U	5U	5U	5U	5U	5U
Bromomethane	10U	10U	10U	10U	10U	10U
2-Butanone	20U	20U	20U	20U	20U	20U
Carbon Disulfide	5U	5U	5U	5U	5U	5U
Carbon Tetrachloride	5U	5U	5U	5U	5U	5U
Chlorobenzene	5U	5U	5U	5U	5U	5U
Chloroethane	10U	10U	10U	10U	10U	10U
2-Chloroethylvinylether	10U	10U	10U	10U	10U	10U
Chloroform	5U	5U	5U	5U	5U	5U
Chloromethane	10U	10U	10U	10U	10U	10U
Dibromochloromethane	5U	5U	5U	5U	5U	5U
1,1-Dichloroethane	5U	5U	5U	5U	5U	5U
1,1-Dichloroethene	5U	5U	5U	5U	5U	5U
1,2-Dichloroethane	5U	5U	5U	5U	5U	5
total 1,2-Dichloroethene	5U	5U	5U	5U	5U	5U
1,2-Dichloropropane	5U	5U	5U	5U	5U	5U
cis-1,3-Dichloropropene	5U	5U	5U	5U	5U	5U
trans-1,3-Dichloropropene	5U	5U	5U	5U	5U	5U
Ethylbenzene	5U	5U	5U	8	5U	130
2-Hexanone	10U	10U	10U	10U	10U	10U
Methylene Chloride	5U	5U	5U	5U	5U	5U
4-Methyl-2-Pentanone	10U	10U	10U	10U	10U	10U
Styrene	5U	5U	5U	5U	5U	5U
1,1,2,2-Tetrachloroethane	5U	5U	5U	5U	5U	5U
Tetrachloroethene	5U	5U	5U	5U	5U	5U
1,1,1-Trichloroethane	5U	5U	5U	19	5U	500
1,1,2-Trichloroethane	5U	5U	5U	5U	5U	5U
Trichloroethene	5U	5U	5U	5U	5U	5U
Trichlorofluoromethane	5U	5U	5U	5U	5U	5U
Vinyl Acetate	10U	10U	10U	10U	10U	10U
Vinyl Chloride	10U	10U	10U	10U	10U	10U
Xylenes (total)	5U	5U	5U	34	5U	740

U - Indicates compound analyzed for but not detected.

VOCs - Volatile organic compounds

DM - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/kg)	Location No.: Sample Date: Lab Sample No.:	021-020 BH-14.0-14.5 7/13/94 9407473-11	021-021 BH-1.5-2.0 7/13/94 9407473-03	021-021 BH-11.0-11.5 7/13/94 9407473-04	021-021 BH-14.0-14.5 7/13/94 9407473-05	021-022 BH-1.5-2.0 7/12/94 9407405-01	021-022 BH-11.0-11.5 7/12/94 9407405-02
Acenaphthene	Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Acenaphthylene		330U	330U	330U	330U	330U	330U
Aniline		330U	330U	330U	330U	330U	330U
Anthracene		330U	330U	330U	330U	330U	330U
Benzo (a) Anthracene		330U	330U	330U	330U	330U	330U
Benzo (b) Fluoranthene		330U	330U	330U	330U	330U	330U
Benzo (k) Fluoranthene		330U	330U	330U	330U	330U	330U
Benzo (a) Pyrene		330U	330U	330U	330U	330U	330U
Benzoic Acid		1,600U	1,600U	1,600U	1,600U	1,600U	1,600U
Benzo(g,h,i)Perylene		330U	330U	330U	330U	330U	330U
Benzyol alcohol		330U	330U	330U	330U	330U	330U
4-Bromophenylphenyl ether		330U	330U	330U	330U	330U	330U
Butylbenzylphthalate		330U	330U	330U	330U	330U	330U
di-n-Butyl phthalate		330U	330U	330U	330U	330U	330U
Carbazole		330U	330U	330U	330U	330U	330U
4-Chloroaniline		330U	330U	330U	330U	330U	330U
bis(2-Chloroethoxy)Methane		330U	330U	330U	330U	330U	330U
bis(2-Chloroethyl)Ether		330U	330U	330U	330U	330U	330U
bis(2-Chloroisopropyl)Ether		330U	330U	330U	330U	330U	330U
4-Chloro-3-Methylphenol		330U	330U	330U	330U	330U	330U
2-Chloronaphthalene		330U	330U	330U	330U	330U	330U
2-Chlorophenol		330U	330U	330U	330U	330U	330U
4-Chlorophenylphenyl ether		330U	330U	330U	330U	330U	330U
Chrysene		330U	330U	330U	330U	330U	330U
Dibenz(a,h)Anthracene		330U	330U	330U	330U	330U	330U
Dibenzofuran		330U	330U	330U	330U	330U	330U
1,2-Dichlorobenzene		330U	330U	330U	330U	330U	330U
1,3-Dichlorobenzene		330U	330U	330U	330U	330U	330U
1,4-Dichlorobenzene		330U	330U	330U	330U	330U	330U
3,3'-Dichlorobenzidine		330U	330U	330U	330U	330U	330U
2,4-Dichlorophenol		330U	330U	330U	330U	330U	330U
Diethylphthalate		330U	330U	330U	330U	330U	330U
2,4-Dimethylphenol		330U	330U	330U	330U	330U	330U
Dimethyl Phthalate		330U	330U	330U	330U	330U	330U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

Table J.3  
Analytical Results of Soil Samples Collected from Site 21  
Minnesota Air National Guard Base  
Duluth, Minnesota

SVOCs (ug/kg)	Location No.:		Sample Date:		Lab Sample No.:		021-020 BH-14.0-14.5		021-021 BH-11.0-11.5		021-021 BH-14.0-14.5		021-022 BH-1.5-2.0		021-022 BH-11.0-11.5	
	Matrix	Soil	7/13/94	9407473-11	Soil	7/13/94	9407473-03	Soil	7/13/94	9407473-04	Soil	7/13/94	9407473-05	Soil	7/12/94	9407405-02
4,6-Dinitro 2-Methylphenol		800U			800U			800U			800U		800U		800U	
2,4-Dinitrophenol		800U			800U			800U			800U		800U		800U	
2,4-Dinitrotoluene		330U			330U			330U			330U		330U		330U	
2,6-Dinitrotoluene		330U			330U			330U			330U		330U		330U	
1,2-Diphenylhydrazine		330U			330U			330U			330U		330U		330U	
bis (2-Ethylhexyl) Phthalate		330U			330U			330U			330U		330U		330U	
Fluoranthene		330U			330U			330U			330U		330U		330U	
Fluorene		330U			330U			330U			330U		330U		330U	
Hexachlorobenzene		330U			330U			330U			330U		330U		330U	
Hexachlorobutadiene		330U			330U			330U			330U		330U		330U	
Hexachloroethane		330U			330U			330U			330U		330U		330U	
Hexachlorocyclopentadiene		330U			330U			330U			330U		330U		330U	
Indeno (1,2,3-cd) Pyrene		330U			330U			330U			330U		330U		330U	
Isophorone		330U			330U			330U			330U		330U		330U	
2-Methylnaphthalene		330U			330U			330U			330U		330U		330U	
2-Methylphenol		330U			330U			330U			330U		330U		330U	
4-Methylphenol		330U			330U			330U			330U		330U		330U	
Naphthalene		330U			330U			330U			330U		330U		330U	
2-Nitroaniline		800U			800U			800U			800U		800U		800U	
3-Nitroaniline		800U			800U			800U			800U		800U		800U	
4-Nitroaniline		800U			800U			800U			800U		800U		800U	
Nitrobenzene		330U			330U			330U			330U		330U		330U	
2-Nitrophenol		330U			330U			330U			330U		330U		330U	
4-Nitrophenol		800U			800U			800U			800U		800U		800U	
N-Nitrosodiphenylamine (1)		330U			330U			330U			330U		330U		330U	
N Nitroso Di n-Propylamine		330U			330U			330U			330U		330U		330U	
Di-n-Octyl Phthalate		330U			330U			330U			330U		330U		330U	
Pentachlorophenol		800U			800U			800U			800U		800U		800U	
Phenanthrene		330U			330U			330U			330U		330U		330U	
Phenol		330U			330U			330U			330U		330U		330U	
Pyrene		330U			330U			330U			330U		330U		330U	
Pyridine		330U			330U			330U			330U		330U		330U	
1,2,4-Trichlorobenzene		330U			330U			330U			330U		330U		330U	
2,4,5-Trichlorophenol		800U			800U			800U			800U		800U		800U	
2,4,6-Trichlorophenol		330U			330U			330U			330U		330U		330U	

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-020 BH-14.0-14.5 7/13/94 9407473-11	021-021 BH-1.5-2.0 7/13/94 9407473-03	021-021 BH-11.0-11.5 7/13/94 9407473-04	021-021 BH-14.0-14.5 7/13/94 9407473-05	021-022 BH-1.5-2.0 7/12/94 9407405-01	021-022 BH-11.0-11.5 7/12/94 9407405-02
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
TPH (mg/kg)	21	140	21	10U	250	13
Pesticides/PCBs (ug/kg)						
a-BHC	0.67U	0.67U	0.67U	0.67U	0.67U	0.67U
b-BHC	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
d-BHC	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
g-BHC	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Heptachlor	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
Aldrin	0.67U	0.67U	0.67U	0.67U	0.67U	1.3
Heptachlor Epoxide	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
Endosulfan I	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
Dieldrin	0.33U	0.33U	0.33U	0.33U	0.33U	0.33U
Endrin	1.3U	1.3U	1.3U	1.3U	1.3U	1.3U
Endosulfan II	1.0U	1.0U	1.0U	1.0U	1.0U	1.0U
4,4'-DDT	2.3U	2.3U	2.3U	2.3U	2.3U	2.3U
Endrin Aldelyde	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
Methoxychlor	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
a-Chlordane	0.33U	0.33U	0.33U	0.33U	0.33U	0.33U
g-Chlordane	1.7U	1.7U	1.7U	1.7U	1.7U	1.7U
4,4'-DDE	0.67U	0.67U	0.67U	0.67U	0.67U	0.67U
4,4'-DDD	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
Endosulfan Sulfate	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
Endrin Ketone	3.3U	3.3U	3.3U	3.3U	3.3U	3.3U
Toxaphene	33U	33U	33U	33U	33U	33U

U - Indicates compound analyzed for but not detected.  
BH - Borehole  
DUP - Duplicate

TPH - Total petroleum hydrocarbons  
PCBs - Polychlorinated biphenyls

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram



**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.:	021-020 BH-14.0-14.5	021-021 BH-11.0-11.5	021-021 BH-14.0-14.5	021-022 BH-1.5-2.0	021-022 BH-11.0-11.5
Sample Date:	7/13/94	7/13/94	7/13/94	7/12/94	7/12/94
Lab Sample No.:	9407473-11	9407473-03	9407473-04	9407405-01	9407405-02
Matrix	Soil	Soil	Soil	Soil	Soil
<b>Pesticides/PCBs (ug/kg)</b>					
Chlordane (technical)	1.7U	1.7U	1.7U	1.7U	1.7U
PCB-1016	17U	17U	17U	17U	17U
PCB-1221	17U	17U	17U	17U	17U
PCB-1232	17U	17U	17U	17U	17U
PCB-1242	17U	17U	17U	17U	17U
PCB-1248	17U	17U	17U	17U	17U
PCB-1260	17U	17U	17U	17U	17U
<b>Metals (mg/kg)</b>					
Silver	3U	3U	3U	0.6U	0.6U
Aluminum	8,250	9,300	11,000	10,100	12,700
Arsenic	1U	1	1	1	2
Beryllium	2U	2U	2U	0.9	0.8
Cadmium	0.07	0.09	0.06	0.8U	0.8
Chromium	6	10	12	18	23
Copper	56.2	48.8	64.4	45	46
Mercury	0.1U	0.1U	0.1U	0.1U	0.1U
Nickel	18	19	20	23	24
Lead	2.8	3.0	2.8	5.0	4.2
Antimony	1U	1U	1U	1U	1U
Selenium	0.8U	0.8U	0.8U	0.8U	0.8U
Thallium	0.4U	0.4U	0.4U	0.4U	0.4U
Zinc	40	41	71	38	42

U - Indicates compound analyzed for but not detected  
 BH - Borehole  
 DUP - Duplicate

TPH - Total petroleum hydrocarbons  
 PCBs - Polychlorinated biphenyls

ug/kg - micrograms per kilogram  
 mg/kg - milligrams per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-022 BH-14.0-14.5 7/12/94 9407405-03	021-023 BH-1.5-2.0 7/12/94 9407405-04	021-023 BH-11.0-11.5 7/12/94 9407405-05	021-023 BH-11.0-11.5 DUP 7/12/94 9407405-06	021-023 BH-14.0-14.5 7/12/94 9407405-07	021-024 BH-1.5-2.0 7/13/94 9407473-06
VOCs (ug/kg) Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Acetone	10U	10U	38	10U	10U	10U
Benzene	79	5U	170	630	1100	5U
Bromodichloromethane	5U	5U	5U	5U	5U	5U
Bromoform	5U	5U	5U	5U	5U	5U
Bromomethane	10U	10U	10U	10U	10U	10U
2-Butanone	20U	20U	20U	20U	20U	20U
Carbon Disulfide	5U	5U	5U	5U	5U	5U
Carbon Tetrachloride	5U	5U	5U	5U	5U	5U
Chlorobenzene	5U	5U	5U	5U	5U	5U
Chloroethane	10U	10U	10U	10U	10U	10U
2-Chloroethylvinylether	10U	10U	10U	10U	10U	10U
Chloroform	5U	5U	5U	5U	5U	5U
Chloromethane	10U	10U	10U	10U	10U	10U
Dibromochloromethane	5U	5U	5U	5U	5U	5U
1,1-Dichloroethane	5U	5U	5U	5U	5U	5U
1,1,1-Dichloroethene	5U	5U	5U	5U	5U	5U
1,2-Dichloroethane	5U	5U	33	39	52	5U
total - 1,2-Dichloroethene	5U	5U	5U	5U	5U	5U
1,2-Dichloropropane	5U	5U	5U	5U	5U	5U
cis-1,3-Dichloropropene	5U	5U	5U	5U	5U	5U
trans-1,3-Dichloropropene	5U	5U	5U	5U	5U	5U
Ethylbenzene	5U	5U	9	5U	110	5U
2-Hexanone	10U	10U	10U	10U	10U	10U
Methylene Chloride	5U	5U	5U	5U	5U	5U
4-Methyl-2-Pentanone	10U	10U	10U	10U	10U	10U
Styrene	5U	5U	5U	5U	5U	5U
1,1,1,2,2-Tetrachloroethane	5U	5U	5U	5U	5U	5U
Tetrachloroethene	5U	5U	5U	5U	5U	5U
Toluene	6	5U	33	5U	350	5U
1,1,1-Trichloroethane	5U	5U	5U	5U	5U	5U
1,1,2-Trichloroethane	5U	5U	5U	5U	5U	5U
Trichloroethene	5U	5U	5U	5U	5U	5U
Trichlorofluoromethane	5U	5U	5U	5U	5U	5U
Vinyl Acetate	10U	10U	10U	10U	10U	10U
Vinyl Chloride	10U	10U	10U	10U	10U	10U
Xylenes (total)	18	5U	33	5U	370	5U

U - Indicates compound analyzed for but not detected  
VOCs - Volatile organic compounds  
DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

Table J.3  
Analytical Results of Soil Samples Collected from Site 21  
Minnesota Air National Guard Base  
Duluth, Minnesota

SVOCs (ug/kg)	Matrix	021-022 BH-14.0-14.5		021-023 BH-1.5-2.0		021-023 BH-11.0-11.5		021-023 BH-11.0-11.5 DUP		021-023 BH-14.0-14.5		021-024 BH-1.5-2.0	
		7/12/94	Soil	7/12/94	Soil	7/12/94	Soil	7/12/94	Soil	7/12/94	Soil	7/13/94	Soil
Lab Sample No.:		9407405-03		9407405-04		9407405-05		9407405-06		9407405-07		9407473-06	
Acenaphthene		330U		330U		330U		330U		330U		330U	
Acenaphthylene		330U		330U		330U		330U		330U		330U	
Aniline		330U		330U		330U		330U		330U		330U	
Anthracene		330U		330U		330U		330U		330U		330U	
Benzo (a) Anthracene		330U		690		330U		330U		330U		330U	
Benzo (b) Fluoranthene		330U		330U		330U		330U		330U		330U	
Benzo (k) Fluoranthene		330U		1,200		330U		330U		330U		330U	
Benzo (a) Pyrene		330U		760		330U		330U		330U		330U	
Benzoic Acid		1,600U		1,600U		1,600U		1,600U		1,600U		1,600U	
Benzo(g,h,i)Perylene		330U		610		330U		330U		330U		330U	
Benzyol alcohol		330U		330U		330U		330U		330U		330U	
4-Bromophenylphenyl ether		330U		330U		330U		330U		330U		330U	
Butylbenzylphthalate		330U		330U		330U		330U		330U		330U	
di-n-Butyl phthalate		330U		330U		330U		330U		330U		330U	
Carbazole		330U		330U		330U		330U		330U		330U	
4-Chloroaniline		330U		330U		330U		330U		330U		330U	
bis(2-Chloroethoxy)Methane		330U		330U		330U		330U		330U		330U	
bis(2-Chloroethyl)Ether		330U		330U		330U		330U		330U		330U	
bis(2-Chloroisopropyl)Ether		330U		330U		330U		330U		330U		330U	
4-Chloro-3-Methylphenol		330U		330U		330U		330U		330U		330U	
2-Chloronaphthalene		330U		330U		330U		330U		330U		330U	
2-Chlorophenol		330U		330U		330U		330U		330U		330U	
4-Chlorophenylphenyl ether		330U		330U		330U		330U		330U		330U	
Chrysene		330U		860		330U		330U		330U		330U	
Dibenz(a,h)Anthracene		330U		330U		330U		330U		330U		330U	
Dibenzofuran		330U		330U		330U		330U		330U		330U	
1,2-Dichlorobenzene		330U		330U		330U		330U		330U		330U	
1,3-Dichlorobenzene		330U		330U		330U		330U		330U		330U	
1,4-Dichlorobenzene		330U		330U		330U		330U		330U		330U	
3,3'-Dichlorobenzidine		330U		330U		330U		330U		330U		330U	
2,4-Dichlorophenol		330U		330U		330U		330U		330U		330U	
Diethylphthalate		330U		330U		330U		330U		330U		330U	
2,4-Dimethylphenol		330U		330U		330U		330U		330U		330U	
Dimethyl Phthalate		330U		330U		330U		330U		330U		330U	

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/kg)	Location No.: Sample Date: Lab Sample No.:	021-022 BH-14.0-14.5 7/12/94 9407405-03	021-023 BH-1.5-2.0 7/12/94 9407405-04	021-023 BH-11.0-11.5 7/12/94 9407405-05	021-023 BH-11.0-11.5 DUP 7/12/94 9407405-06	021-023 BH-14.0-14.5 7/13/94 9407405-07	021-024 BH-1.5-2.0 7/13/94 9407473-06
Matrix		Soil	Soil	Soil	Soil	Soil	Soil
4,6-Dinitro-2-Methylphenol		800U	800U	800U	800U	800U	800U
2,4-Dinitrophenol		800U	800U	800U	800U	800U	800U
2,4-Dinitrotoluene		330U	330U	330U	330U	330U	330U
2,6-Dinitrotoluene		330U	330U	330U	330U	330U	330U
1,2-Diphenylhydrazine		330U	330U	330U	330U	330U	330U
bis (2-Ethylhexyl) Phthalate		330U	330U	330U	330U	330U	330U
Fluoranthene		330U	1,500	330U	330U	330U	330U
Fluorene		330U	330U	330U	330U	330U	330U
Hexachlorobenzene		330U	330U	330U	330U	330U	330U
Hexachlorobutadiene		330U	330U	330U	330U	330U	330U
Hexachlorocyclopentadiene		330U	330U	330U	330U	330U	330U
Indeno (1,2,3-cd) Pyrene		330U	330U	330U	330U	330U	330U
Isophorone		330U	530	330U	330U	330U	330U
2-Methylnaphthalene		330U	330U	330U	330U	330U	330U
2-Methylphenol		330U	330U	330U	330U	330U	330U
4-Methylphenol		330U	330U	330U	330U	330U	330U
Naphthalene		330U	330U	330U	330U	330U	330U
2-Nitroaniline		800U	800U	800U	800U	800U	800U
3-Nitroaniline		800U	800U	800U	800U	800U	800U
4-Nitroaniline		800U	800U	800U	800U	800U	800U
Nitrobenzene		330U	330U	330U	330U	330U	330U
2-Nitrophenol		330U	330U	330U	330U	330U	330U
4-Nitrophenol		800U	800U	800U	800U	800U	800U
N-Nitrosodiphenylamine (1)		330U	330U	330U	330U	330U	330U
N-Nitroso-Di-n-Propylamine		330U	330U	330U	330U	330U	330U
Di-n-Octyl Phthalate		330U	330U	330U	330U	330U	330U
Pentachlorophenol		800U	800U	800U	800U	800U	800U
Phenanthrene		330U	990	330U	330U	330U	330U
Phenol		330U	330U	330U	330U	330U	330U
Pyrene		330U	1,500	330U	330U	330U	330U
Pyridine		330U	330U	330U	330U	330U	330U
1,2,4-Trichlorobenzene		330U	330U	330U	330U	330U	330U
2,4,5-Trichlorophenol		800U	800U	800U	800U	800U	800U
2,4,6-Trichlorophenol		330U	330U	330U	330U	330U	330U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-022 BH-14.0-14.5 7/12/94 9407405-03	021-023 BH-1.5-2.0 7/12/94 9407405-04	021-023 BH-11.0-11.5 7/12/94 9407405-05	021-023 BH-11.0-11.5 DUP 7/12/94 9407405-06	021-023 BH-14.0-14.5 7/12/94 9407405-07	021-024 BH-1.5-2.0 7/13/94 9407473-06
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
TPH (mg/kg)	10U	190	10U	12	18	14
Pesticides/PCBs (ug/kg)						
a-BHC	0.67U	3.35U	0.67U	0.67U	0.67U	0.67U
b-BHC	1.7U	8.5U	1.7U	1.7U	1.7U	1.7U
d-BHC	1.7U	8.5U	1.7U	1.7U	1.7U	1.7U
g-BHC	1.0U	5.0U	1.0U	1.0U	1.0U	1.0U
Heptachlor	1.0U	5.0U	1.0U	1.0U	1.0U	1.0U
Aldrin	0.67U	3.35U	0.67U	0.67U	0.67U	0.67U
Heptachlor Epoxide	1.7U	8.5U	1.7U	1.7U	1.7U	1.7U
Endosulfan I	1.7U	8.5U	1.7U	1.7U	1.7U	1.7U
Dieldrin	0.33U	1.65U	0.33U	0.33U	0.33U	0.33U
Endrin	1.3U	6.5U	1.3U	1.3U	1.3U	1.3U
Endosulfan II	1.0U	5.0U	1.0U	1.0U	1.0U	1.0U
4,4'-DDT	2.3U	11.5U	2.3U	2.3U	2.3U	2.3U
Endrin Aldehyde	3.3U	16.5U	3.3U	3.3U	3.3U	3.3U
Methoxychlor	1.7U	8.5U	1.7U	1.7U	1.7U	1.7U
a-Chlordane	0.33U	1.65U	0.33U	0.33U	0.33U	0.33U
g-Chlordane	1.7U	8.5U	1.7U	1.7U	1.7U	1.7U
4,4'-DDE	0.67U	3.35U	0.67U	0.67U	0.67U	0.67U
4,4'-DDD	3.3U	16.5U	3.3U	3.3U	3.3U	3.3U
Endosulfan Sulfate	3.3U	16.5U	3.3U	3.3U	3.3U	3.3U
Endrin Ketone	3.3U	16.5U	3.3U	3.3U	3.3U	3.3U
Toxaphene	33U	165U	33U	33U	33U	33U

U - Indicates compound analyzed for but not detected  
BH - Borehole  
DUP - Duplicate

TPH - Total petroleum hydrocarbons  
PCBs - Polychlorinated biphenyls

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-022 BH-14.0-14.5		021-023 BH-1.5-2.0		021-023 BH-11.0-11.5		021-023 BH-11.0-11.5 DUP		021-023 BH-14.0-14.5		021-024 BH-1.5-2.0	
	7/12/94	Soil	7/12/94	Soil	7/12/94	Soil	7/12/94	Soil	7/12/94	Soil	7/13/94	Soil
	9407405-03		9407405-04		9407405-05		9407405-06		9407405-07		9407473-06	
<b>Pesticides/PCBs (ug/kg)</b>												
Chlordane (technical)	1.7U		47		1.7U		1.7U		1.7U		1.7U	
PCB-1016	17U		85U		17U		17U		17U		17U	
PCB-1221	17U		85U		17U		17U		17U		17U	
PCB-1232	17U		85U		17U		17U		17U		17U	
PCB-1242	17U		85U		17U		17U		17U		17U	
PCB-1248	17U		85U		17U		17U		17U		17U	
PCB-1260	17U		85U		17U		17U		17U		17U	
<b>Metals (mg/kg)</b>												
Silver	0.6U		0.6U		0.6U		0.6U		0.6U		3U	
Aluminum	10,300		11,100		17,800		9,560		8,870		11,400	
Arsenic	2		5U		5U		1U		1		2	
Beryllium	0.8		0.9		1.0		0.8		0.7		2U	
Cadmium	0.8U		0.8U		0.8U		0.8U		0.8U		0.07	
Chromium	19		21		29		18		18		17	
Copper	42		47		44		46		24		36.4	
Mercury	0.1U		0.1U		0.1U		0.1U		0.1U		0.1U	
Nickel	25		26		30		22		17		17	
Lead	2.8		20		3.9		2.3		4.7		5.3	
Antimony	1U		1U		1U		1U		1U		1U	
Selenium	0.8U		0.8U		0.8U		0.8U		0.8U		0.8U	
Thallium	0.4U		0.4U		0.4U		0.4U		0.4U		0.4U	
Zinc	34		41		43		40		32		42	

U - Indicates compound analyzed for but not detected  
BH - Borehole  
DUP - Duplicate

TPH - Total petroleum hydrocarbons  
PCBs - Polychlorinated biphenyls

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-024 BH-10.0-10.5 7/13/94 9407473-07	021-024 BH-16.0-16.5 7/13/94 9407473-08	021-025 BH-1.5-2.0 7/12/94 9407405-08	021-025 BH-10.0-10.5 7/12/94 9407405-09	021-025 BH-14.0-14.5 7/12/94 9407405-10
VOCs (ug/kg)	Soil	Soil	Soil	Soil	Soil
Acetone	10U	10U	10U	10U	10U
Benzene	640	330	5U	5U	5U
Bromodichloromethane	5U	5U	5U	5U	5U
Bromoform	5U	5U	5U	5U	5U
Bromomethane	10U	10U	10U	10U	10U
2-Butanone	20U	20U	20U	20U	20U
Carbon Disulfide	5U	5U	5U	5U	5U
Carbon Tetrachloride	5U	5U	5U	5U	5U
Chlorobenzene	5U	5U	5U	5U	5U
Chloroethane	10U	10U	10U	10U	10U
2-Chloroethylvinylether	10U	10U	10U	10U	10U
Chloroform	5U	5U	5U	5U	5U
Chloromethane	10U	10U	10U	10U	10U
Dibromochloromethane	5U	5U	5U	5U	5U
1,1-Dichloroethane	5U	5U	5U	5U	5U
1,1-Dichloroethene	5U	5U	5U	5U	5U
1,2-Dichloroethane	5U	7	5U	5U	5U
total -1,2-Dichloroethene	5U	5U	5U	5U	5U
1,2-Dichloropropane	5U	5U	5U	5U	5U
cis-1,3-Dichloropropene	5U	5U	5U	5U	5U
trans-1,3-Dichloropropene	5U	5U	5U	5U	5U
Ethylbenzene	21	61	5U	5U	5U
2-Hexanone	10U	10U	10U	10U	10U
Methylene Chloride	5U	5U	5U	5U	5U
4-Methyl-2-Pentanone	10U	10U	10U	10U	10U
Styrene	5U	5U	5U	5U	5U
1,1,2,2-Tetrachloroethane	5U	5U	5U	5U	5U
Tetrachloroethene	5U	5U	5U	5U	5U
Toluene	8	5U	5U	5U	5U
1,1,1-Trichloroethane	5U	5U	5U	5U	5U
1,1,2-Trichloroethane	5U	5U	5U	5U	5U
Trichloroethene	5U	5U	5U	5U	5U
Trichlorofluoromethane	5U	5U	5U	5U	5U
Vinyl Acetate	10U	10U	10U	10U	10U
Vinyl Chloride	10U	10U	10U	10U	10U
Xylenes (total)	5U	5U	5U	5U	5U

U - Indicates compound analyzed for but not detected.

VOCs - Volatile organic compounds

DU - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/kg)	Location No.:		021-024 BH-10.0-10.5		021-024 BH-16.0-16.5		021-025 BH-1.5-2.0		021-025 BH-10.0-10.5		021-025 BH-14.0-14.5	
	Matrix	Sample Date:	7/13/94	9407473-07	7/13/94	9407473-08	7/13/94	9407405-08	7/12/94	9407405-09	7/12/94	9407405-10
Acenaphthene	Soil		330U		330U		330U		330U		330U	
Acenaphthylene	Soil		330U		330U		330U		330U		330U	
Aniline	Soil		330U		330U		330U		330U		330U	
Anthracene	Soil		330U		330U		330U		330U		330U	
Benzo (a) Anthracene	Soil		330U		330U		330U		330U		330U	
Benzo (b) Fluoranthene	Soil		330U		330U		330U		330U		330U	
Benzo (k) Fluoranthene	Soil		330U		330U		330U		330U		330U	
Benzo (a) Pyrene	Soil		330U		330U		330U		330U		330U	
Benzoic Acid	Soil		1,600U		1,600U		1,600U		1,600U		1,600U	
Benzo(g,h,i)Perylene	Soil		330U		330U		330U		330U		330U	
Benzy alcohol	Soil		330U		330U		330U		330U		330U	
4-Bromophenylphenyl ether	Soil		330U		330U		330U		330U		330U	
Butylbenzylphthalate	Soil		330U		330U		330U		330U		330U	
di-n-Butyl phthalate	Soil		330U		330U		330U		330U		330U	
Carbazole	Soil		330U		330U		330U		330U		330U	
4-Chloroaniline	Soil		330U		330U		330U		330U		330U	
bis(2-Chloroethoxy)Methane	Soil		330U		330U		330U		330U		330U	
bis(2-Chloroethyl)Ether	Soil		330U		330U		330U		330U		330U	
bis(2-Chloroisopropyl)Ether	Soil		330U		330U		330U		330U		330U	
4-Chloro-3-Methylphenol	Soil		330U		330U		330U		330U		330U	
2-Chloronaphthalene	Soil		330U		330U		330U		330U		330U	
2-Chlorophenol	Soil		330U		330U		330U		330U		330U	
4-Chlorophenylphenyl ether	Soil		330U		330U		330U		330U		330U	
Chrysene	Soil		330U		330U		330U		330U		330U	
Dibenz(a,h)Anthracene	Soil		330U		330U		330U		330U		330U	
Dibenzofuran	Soil		330U		330U		330U		330U		330U	
1,2-Dichlorobenzene	Soil		330U		330U		330U		330U		330U	
1,3-Dichlorobenzene	Soil		330U		330U		330U		330U		330U	
1,4-Dichlorobenzene	Soil		330U		330U		330U		330U		330U	
3,3'-Dichlorobenzidine	Soil		330U		330U		330U		330U		330U	
2,4-Dichlorophenol	Soil		330U		330U		330U		330U		330U	
Diethylphthalate	Soil		330U		330U		330U		330U		330U	
2,4-Dimethylphenol	Soil		330U		330U		330U		330U		330U	
Dimethyl Phthalate	Soil		330U		330U		330U		330U		330U	

U - Indicates compound analyzed for but not detected.

SVOCs - Semivolatile organic compounds

DDP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram



Table J.3  
Analytical Results of Soil Samples Collected from Site 21  
Minnesota Air National Guard Base  
Duluth, Minnesota

SVOCs (ug/kg)	Location No.: Sample Date: Lab Sample No.:	021-024 BH-10.0-10.5 7/13/94 9407473-07	021-024 BH-16.0-16.5 7/13/94 9407473-08	021-025 BH-1.5-2.0 7/12/94 9407405-08	021-025 BH-10.0-10.5 7/12/94 9407405-09	021-025 BH-14.0-14.5 7/12/94 9407405-10
4,6-Dinitro-2-Methylphenol	Matrix	Soil	Soil	Soil	Soil	Soil
2,4-Dinitrophenol		800U	800U	800U	800U	800U
2,4-Dinitrotoluene		800U	800U	800U	800U	800U
2,6-Dinitrotoluene		330U	330U	330U	330U	330U
1,2-Diphenylhydrazine		330U	330U	330U	330U	330U
bis (2-Ethylhexyl) Phthalate		330U	330U	330U	330U	330U
Fluoranthene		330U	330U	330U	330U	330U
Fluorene		330U	330U	330U	330U	330U
Hexachlorobenzene		330U	330U	330U	330U	330U
Hexachlorobutadiene		330U	330U	330U	330U	330U
Hexachloroethane		330U	330U	330U	330U	330U
Hexachlorocyclopentadiene		330U	330U	330U	330U	330U
Indeno (1,2,3 cd) Pyrene		330U	330U	330U	330U	330U
Isophorone		330U	330U	330U	330U	330U
2-Methylnaphthalene		330U	330U	330U	330U	330U
2-Methylphenol		330U	330U	330U	330U	330U
4-Methylphenol		330U	330U	330U	330U	330U
Naphthalene		330U	330U	330U	330U	330U
2-Nitroaniline		800U	800U	800U	800U	800U
3-Nitroaniline		800U	800U	800U	800U	800U
4-Nitroaniline		800U	800U	800U	800U	800U
Nitrobenzene		330U	330U	330U	330U	330U
2-Nitrophenol		330U	330U	330U	330U	330U
4-Nitrophenol		800U	800U	800U	800U	800U
N-Nitrosodiphenylamine (1)		330U	330U	330U	330U	330U
N-Nitroso-Di-n-Propylamine		330U	330U	330U	330U	330U
Di-n-Octyl Phthalate		330U	330U	330U	330U	330U
Pentachlorophenol		800U	800U	800U	800U	800U
Phenanthrene		330U	330U	330U	330U	330U
Phenol		330U	330U	330U	330U	330U
Pyrene		330U	330U	330U	330U	330U
Pyridine		330U	330U	330U	330U	330U
1,2,4-Trichlorobenzene		330U	330U	330U	330U	330U
2,4,5-Trichlorophenol		800U	800U	800U	800U	800U
2,4,6-Trichlorophenol		330U	330U	330U	330U	330U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
DUP - Duplicate

BH - Borehole  
ug/kg - micrograms per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	Matrix	021-024 BH-10.0-10.5		021-024 BH-16.0-16.5		021-025 BH-1.5-2.0		021-025 BH-10.0-10.5		021-025 BH-14.0-14.5	
		7/13/94 9407473-07	Soil	7/13/94 9407473-08	Soil	7/12/94 9407405-08	Soil	7/12/94 9407405-09	Soil	7/12/94 9407405-10	Soil
TPH (mg/kg)		18		10U		15		15		15	
Pesticides/PCBs (ug/kg)											
a-BHC		0.67U		0.67U		0.67U		0.67U		0.67U	
b-BHC		1.7U		1.7U		1.7U		1.7U		1.7U	
d-BHC		1.7U		1.7U		1.7U		1.7U		1.7U	
g-BHC		1.0U		1.0U		1.0U		1.0U		1.0U	
Heptachlor		1.0U		1.0U		1.0U		1.0U		1.0U	
Aldrin		0.67U		0.67U		0.67U		0.67U		0.67U	
Heptachlor Epoxide		1.7U		1.7U		1.7U		1.7U		1.7U	
Endosulfan I		1.7U		1.7U		1.7U		1.7U		1.7U	
Dieldrin		0.33U		0.33U		0.33U		0.33U		0.33U	
Endrin		1.3U		1.3U		1.3U		1.3U		1.3U	
Endosulfan II		1.0U		1.0U		1.0U		1.0U		1.0U	
4,4'-DDT		2.3U		2.3U		2.3U		2.3U		2.3U	
Endrin Aldehyde		3.3U		3.3U		3.3U		3.3U		3.3U	
Methoxychlor		1.7U		1.7U		1.7U		1.7U		1.7U	
a-Chlordane		0.33U		0.33U		0.33U		0.33U		0.33U	
g-Chlordane		1.7U		1.7U		1.7U		1.7U		1.7U	
4,4'-DDE		0.67U		0.67U		0.67U		0.67U		0.67U	
4,4'-DDD		3.3U		3.3U		3.3U		3.3U		3.3U	
Endosulfan Sulfate		3.3U		3.3U		3.3U		3.3U		3.3U	
Endrin Ketone		3.3U		3.3U		3.3U		3.3U		3.3U	
Toxaphene		33U		33U		33U		33U		33U	

U - Indicates compound analyzed for but not detected.  
BH - Borehole  
DUP - Duplicate

TPH - Total petroleum hydrocarbons  
PCBs - Polychlorinated biphenyls

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.3**  
**Analytical Results of Soil Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-024 BH-10.0-10.5 7/13/94 9407473-07		021-024 BH-16.0-16.5 7/13/94 9407473-08		021-025 BH-1.5-2.0 7/12/94 9407405-08		021-025 BH-10.0-10.5 7/12/94 9407405-09		021-025 BH-14.0-14.5 7/12/94 9407405-10	
	Matrix	Soil	Matrix	Soil	Matrix	Soil	Matrix	Soil	Matrix	Soil
<b>Pesticides/PCBs (ug/kg)</b>										
Chlordane (technical)		1.7U		1.7U		1.7U		1.7U		1.7U
PCB-1016		17U		17U		17U		17U		17U
PCB-1221		17U		17U		17U		17U		17U
PCB-1232		17U		17U		17U		17U		17U
PCB-1242		17U		17U		17U		17U		17U
PCB-1248		17U		17U		17U		17U		17U
PCB-1260		17U		17U		17U		17U		17U
<b>Metals (mg/kg)</b>										
Silver		3U		3U		0.6U		0.6U		0.6U
Aluminum		12,800		8,660		10,100		13,000		12,900
Arsenic		1U		1U		1		1		5U
Beryllium		2U		2U		0.8		1.0		1.0
Cadmium		0.20		0.07		0.8U		0.8U		0.8U
Chromium		23		7		18		24		26
Copper		53.4		61.6		38		48		67
Mercury		0.1U		0.1U		0.1U		0.1U		0.1U
Nickel		17		17		20		31		22
Lead		5.0		2.4		3.9		5.0		3.3
Antimony		1U		1U		1U		1U		1U
Selenium		0.8U		0.8U		0.8U		0.8U		0.8U
Thallium		0.4U		0.4U		0.4U		0.4U		0.4U
Zinc		67		52		35		54		39

U - Indicates compound analyzed for but not detected  
BH - Borehole  
DUP - Duplicate

TPH - Total petroleum hydrocarbons  
PCBs - Polychlorinated biphenyls

ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table J.4**  
**Analytical Results of Groundwater Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-009MW-GW02 10/6/94 9410269-02	021-010MW-GW02 10/6/94 9410269-04	021-010MW-GW02 DUP 10/6/94 9410269-05	021-014MW-GW02 10/6/94 9410269-03	021-026MW-GW02 7/25/94 9407971-01	021-026MW-GW03 10/6/94 9410269-06
VOCs (ug/L) Matrix	Water	Water	Water	Water	Water	Water
Acetone	10U	10U	10U	10U	10U	10U
Benzene	5U	5U	5U	5U	5U	5U
Bromodichloromethane	5U	5U	5U	5U	5U	5U
Bromoform	5U	5U	5U	5U	5U	5U
Bromomethane	10U	10U	10U	10U	10U	10U
2-Butanone	20U	20U	20U	20U	20U	20U
Carbon Disulfide	5U	5U	5U	5U	5U	5U
Carbon Tetrachloride	5U	5U	5U	5U	5U	5U
Chlorobenzene	5U	5U	5U	5U	5U	5U
Chloroethane	10U	10U	10U	10U	10U	10U
2-Chloroethylvinylether	10U	10U	10U	10U	10U	10U
Chloroform	5U	5U	5U	5U	5U	5U
Chloromethane	10U	10U	10U	10U	10U	10U
Dibromochloromethane	5U	5U	5U	5U	5U	5U
1,1-Dichloroethane	5U	5U	5U	5U	5U	5U
1,1-Dichloroethene	5U	5U	5U	5U	5U	5U
1,2-Dichloroethane	5U	5U	5U	5U	5U	5U
total - 1,2-Dichloroethene	5U	5U	5U	5U	5U	5U
1,2-Dichloropropane	5U	5U	5U	5U	5U	5U
cis-1,3-Dichloropropene	5U	5U	5U	5U	5U	5U
trans-1,3-Dichloropropene	5U	5U	5U	5U	5U	5U
Ethylbenzene	5U	5U	5U	5U	5U	5U
2-Hexanone	10U	10U	10U	10U	10U	10U
Methylene Chloride	5U	5U	5U	5U	5U	5U
4-Methyl-2-Pentanone	10U	10U	10U	10U	10U	10U
Styrene	5U	5U	5U	5U	5U	5U
1,1,2,2-Tetrachloroethane	5U	5U	5U	5U	5U	5U
Tetrachloroethene	5U	5U	5U	5U	5U	5U
Toluene	5U	5U	5U	5U	5U	5U
1,1,1-Trichloroethane	5U	5U	5U	5U	5U	5U
1,1,2-Trichloroethane	5U	5U	5U	5U	5U	5U
Trichloroethene	5U	5U	5U	68	5U	5U
Trichlorofluoromethane	5U	5U	5U	5U	5U	5U
Vinyl Acetate	10U	10U	10U	10U	10U	10U
Vinyl Chloride	10U	10U	10U	10U	10U	10U
Xylenes (total)	5U	5U	5U	5U	5U	5U

U - Indicates compound analyzed for but not detected.  
VOCs - Volatile organic compounds

DUP - Duplicate  
ug/L - micrograms per liter

Table J.4  
Analytical Results of Groundwater Samples Collected from Site 21  
Minnesota Air National Guard Base  
Duluth, Minnesota

Location No.: Sample Date: Lab Sample No:		021-009MW-GW01 7/22/94 9407999-03	021-010MW-GW01 7/22/94 9407999-05	021-010MW-GW01 DUP 7/22/94 9407999-06	021-014MW-GW01 7/22/94 9407999-07	021-026MW-GW01 7/25/94 9407999-08	021-026MW-GW02 7/25/94 9407971-01
Metals (mg/L)	Matrix	Water	Water	Water	Water	Water	Water
Aluminum		1.06	3.00	1.34	17.1	2.96	1.30
Antimony		0.01U	0.01U	0.01U	0.01U	0.01U	0.01U
Arsenic		0.01U	0.01U	0.01U	0.01U	0.01U	0.01U
Beryllium		0.004U	0.004U	0.004U	0.004U	0.004U	0.004U
Cadmium		0.0002	0.0002	0.0001U	0.0003	0.0004	0.0002
Chromium		0.024	0.004	0.002U	0.025	0.004	0.003
Copper		0.02	0.02	0.01U	0.17	0.03	0.02
Lead		0.003U	0.003U	0.003U	0.003U	0.003U	0.003U
Mercury		0.0002U	0.0002U	0.0002U	0.0002U	0.0002U	0.0002U
Nickel		0.62	0.012	0.008	0.051	0.009	0.046
Selenium		0.005U	0.005U	0.005U	0.005U	0.005U	0.008U
Silver		N/A	N/A	N/A	N/A	N/A	N/A
Thallium		0.004U	0.004U	0.004U	0.004U	0.004U	0.004U
Zinc		0.03	0.02	0.02	0.07	0.02	0.02

U - Indicates compound analyzed for but not detected.

DUP - Duplicate  
mg/L - milligrams per liter

**Table J.5**  
**Analytical Results of Sediment Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

VOCs (ug/kg)	Matrix	021-004SD		021-005SD		021-006SD		021-007SD		021-007SD DUP	
		10/4/94	9410146-05	10/4/94	9410146-02	10/4/94	9410146-01	10/4/94	9410146-04	10/4/94	9410146-03
		Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Acetone		35	10U	10U	10U	10U	10U	12	10U	22	5U
Benzene		5U	5	5U	5U	5U	5U	5U	5U	5U	5U
Bromodichloromethane		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Bromoform		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Bromomethane		10U	10U	10U	10U	10U	10U	10U	10U	10U	10U
2-Butanone		20U	20U	20U	20U	20U	20U	20U	20U	20U	20U
Carbon Disulfide		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Carbon Tetrachloride		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Chlorobenzene		5U	5	5U	5U	5U	5U	5U	5U	5U	5U
Chloroethane		10U	10U	10U	10U	10U	10U	10U	10U	10U	10U
2-Chloroethylvinylether		10U	10U	10U	10U	10U	10U	10U	10U	10U	10U
Chloroform		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Chloromethane		10U	10U	10U	10U	10U	10U	10U	10U	10U	10U
Dibromochloromethane		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
1,1-Dichloroethane		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
1,1-Dichloroethene		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
1,2-Dichloroethane		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
total - 1,2-Dichloroethene		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
1,2-Dichloropropane		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
cis-1,3-Dichloropropene		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
trans-1,3-Dichloropropene		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Ethylbenzene		10U	10U	10U	10U	10U	10U	10U	10U	10U	10U
2-Hexanone		13	400	10U	10U	6	10U	23	11	11	10U
Methylene Chloride		10U	10U	10U	10U	10U	10U	10U	10U	10U	10U
4-Methyl-2-Pentanone		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Styrene		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
1,1,2,2-Tetrachloroethane		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Tetrachloroethene		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Toluene		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
1,1,1-Trichloroethane		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
1,1,2-Trichloroethane		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Trichloroethene		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Trichlorofluoromethane		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U
Vinyl Acetate		10U	10U	10U	10U	10U	10U	10U	10U	10U	10U
Vinyl Chloride		10U	10U	10U	10U	10U	10U	10U	10U	10U	10U
Xylenes (total)		5U	5U	5U	5U	5U	5U	5U	5U	5U	5U

U - Indicates compound analyzed for but not detected.  
VOCs - Volatile organic compounds  
SD - Sediment

DUP - Duplicate  
ug/kg - micrograms per kilogram

**Table J.5**  
**Analytical Results of Sediment Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/kg)	Location No.:		021-004SD		021-005SD		021-006SD		021-007SD		021-007SD DUP	
	Sample Date:	Matrix	10/4/94	Sediment	10/4/94	Sediment	10/4/94	Sediment	10/4/94	Sediment	10/4/94	Sediment
Lab Sample No.:	9410146-05		9410146-02		9410146-01		9410146-04		9410146-03			
Acenaphthene	330U		330U		330U		330U		330U		330U	
Acenaphthylene	330U		330U		330U		330U		330U		330U	
Aniline	330U		330U		330U		330U		330U		330U	
Anthracene	330U		330U		330U		330U		330U		330U	
Benzo (a) Anthracene	330U		330U		330U		330U		330U		330U	
Benzo (b) Fluoranthene	330U		330U		330U		330U		330U		330U	
Benzo (k) Fluoranthene	330U		330U		330U		330U		330U		330U	
Benzo (a) Pyrene	530		770		3000		330U		330U		330U	
Benzoic Acid	1,600U		1,600U		1,600U		1,600U		1,600U		1,600U	
Benzo(g,h,i)Perylene	330U		330U		330U		330U		330U		330U	
Benzyl alcohol	330U		330U		330U		330U		330U		330U	
4-Bromophenylphenyl ether	330U		330U		330U		330U		330U		330U	
Butylbenzylphthalate	330U		330U		330U		330U		330U		330U	
di-n-Butyl phthalate	330U		330U		330U		330U		330U		330U	
Carbazole	330U		330U		330U		330U		330U		330U	
4-Chloroaniline	330U		330U		330U		330U		330U		330U	
bis(2-Chloroethoxy)Methane	330U		330U		330U		330U		330U		330U	
bis(2-Chloroethyl)Ether	330U		330U		330U		330U		330U		330U	
bis(2-Chloroisopropyl)Ether	330U		330U		330U		330U		330U		330U	
4-Chloro-3-Methylphenol	330U		330U		330U		330U		330U		330U	
2-Chloronaphthalene	330U		330U		330U		330U		330U		330U	
2-Chlorophenol	330U		330U		330U		330U		330U		330U	
4-Chlorophenylphenyl ether	330U		330U		330U		330U		330U		330U	
Chrysene	330U		330U		330U		330U		330U		330U	
Dibenz(a,h)Anthracene	330U		330U		330U		330U		330U		330U	
Dibenzofuran	330U		330U		330U		330U		330U		330U	
1,2-Dichlorobenzene	330U		330U		330U		330U		330U		330U	
1,3-Dichlorobenzene	330U		330U		330U		330U		330U		330U	
1,4-Dichlorobenzene	330U		330U		330U		330U		330U		330U	
3,3'-Dichlorobenzidine	330U		330U		330U		330U		330U		330U	
2,4-Dichlorophenol	330U		330U		330U		330U		330U		330U	
Diethylphthalate	330U		330U		330U		330U		330U		330U	
2,4-Dimethylphenol	330U		330U		330U		330U		330U		330U	
Dimethyl Phthalate	330U		330U		330U		330U		330U		330U	

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
SD - Sediment

DUP - Duplicate  
ug/kg - micrograms per kilogram

**Table J.5**  
**Analytical Results of Sediment Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/kg)	Location No.: Sample Date: Lab Sample No.: Matrix	021-004SD 10/4/94 9410146-05		021-005SD 10/4/94 9410146-02		021-006SD 10/4/94 9410146-01		021-007SD 10/4/94 9410146-04		021-007SD DUP 10/4/94 9410146-03	
		Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
4,6-Dinitro-2-Methylphenol		800U	800U	800U	800U	800U	800U	800U	800U	800U	800U
2,4-Dinitrophenol		800U	800U	800U	800U	800U	800U	800U	800U	800U	800U
2,4-Dinitrotoluene		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
2,6-Dinitrotoluene		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
1,2-Diphenylhydrazine		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
bis (2-Ethylhexyl) Phthalate		330U	470	330U	1,600	330U	330U	330U	330U	330U	330U
Fluoranthene		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
Phenanthrene		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
Hexachlorobenzene		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
Hexachlorobutadiene		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
Hexachloroethane		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
Hexachlorocyclopentadiene		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
Indeno (1,2,3-cd) Pyrene		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
Isophorone		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
2-Methylnaphthalene		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
2-Methylphenol		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
4-Methylphenol		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
Naphthalene		330U	520	330U	330U	330U	330U	330U	330U	330U	330U
2-Nitroaniline		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
3-Nitroaniline		800U	800U	800U	800U	800U	800U	800U	800U	800U	800U
4-Nitroaniline		800U	800U	800U	800U	800U	800U	800U	800U	800U	800U
Nitrobenzene		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
2-Nitrophenol		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
4-Nitrophenol		800U	800U	800U	800U	800U	800U	800U	800U	800U	800U
N-Nitrosodiphenylamine (1)		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
N-Nitroso-Di-n-Propylamine		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
Di-n-Octyl Phthalate		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
Pentachlorophenol		800U	800U	800U	800U	800U	800U	800U	800U	800U	800U
Phenanthrene		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
Phenol		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
Pyrene		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
Pyridine		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
1,2,4-Trichlorobenzene		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U
2,4,5-Trichlorophenol		800U	800U	800U	800U	800U	800U	800U	800U	800U	800U
2,4,6-Trichlorophenol		330U	330U	330U	330U	330U	330U	330U	330U	330U	330U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
SD - Sediment

DUP - Duplicate  
ug/kg - micrograms per kilogram



**Table J.5**  
**Analytical Results of Sediment Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:		021-004SD 10/4/94 9410146-05	021-005SD 10/4/94 9410146-02	021-006SD 10/4/94 9410146-01	021-007SD 10/4/94 9410146-04	021-007SD DUP 10/4/94 9410146-03
Pesticides	Matrix	Sediment	Sediment	Sediment	Sediment	Sediment
TPH (mg/kg)		450	230	20	74	120
Pesticides/PCBs (ug/kg)						
a-BHC		0.67U	0.67U	0.67U	0.67U	0.67U
b-BHC		1.7U	1.7U	1.7U	1.7U	1.7U
γ-BHC		1.7U	1.7U	1.7U	1.7U	1.7U
δ-BHC		1.0U	1.0U	1.0U	1.0U	1.0U
Heptachlor		1.0U	1.0U	1.0U	1.0U	1.0U
Aldrin		0.67U	0.67U	0.67U	0.67U	0.67U
Heptachlor Epoxide		1.7U	1.7U	1.7U	1.7U	1.7U
Endosulfan I		1.7U	1.7U	1.7U	1.7U	1.7U
Dieldrin		0.33U	0.33U	0.33U	0.33U	0.33U
Endrin		1.3U	1.3U	1.3U	1.3U	1.3U
Endosulfan II		1.0U	1.0U	1.0U	1.0U	1.0U
1,4'-DDT		2.3U	2.3U	2.3U	2.3U	2.3U
Endrin Aldehyde		3.3U	3.3U	3.3U	3.3U	3.3U
Methoxychlor		1.7U	1.7U	1.7U	1.7U	1.7U
α-Chlordane		0.33U	0.33U	0.33U	0.33U	0.33U
γ-Chlordane		1.7U	1.7U	1.7U	1.7U	1.7U
4,4'-DDE		0.67U	0.67U	0.67U	0.67U	0.67U
4,4'-DDD		3.3U	3.3U	3.3U	3.3U	3.3U
Endosulfan Sulfate		3.3U	3.3U	3.3U	3.3U	3.3U
Endrin Ketone		3.3U	3.3U	3.3U	3.3U	3.3U
Toxaphene		33U	33U	33U	33U	33U
Chlordane (technical)		1.7U	1.7U	1.7U	1.7U	1.7U
PCB-1016		17U	17U	17U	17U	17U
PCB-1221		17U	17U	17U	17U	17U
PCB-1232		17U	17U	17U	17U	17U
PCB-1242		17U	17U	17U	17U	17U
PCB-1248		17U	17U	17U	17U	17U
PCB-1254		17U	17U	17U	17U	17U
PCB-1260		17U	17U	17U	17U	17U

DUP - Duplicate  
SD - Sediment  
mg/kg - milligrams per kilogram  
ug/kg - micrograms per kilogram

U - Indicates compound analyzed for but not detected  
TPH - Total petroleum hydrocarbons  
PCBs - Polychlorinated biphenyls

**Table J.5**  
**Analytical Results of Sediment Samples Collected from Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Metals (mg/kg)	Location No.: Sample Date: Lab Sample No:	Matrix	021-004SD		021-005SD		021-005ASD		021-006SD		021-007SD	
			7/23/94	Soil	7/23/94	Soil	7/23/94	Soil	7/23/94	Soil	7/23/94	Soil
			9407998-10		9407998-11		9407998-12		9407998-13		9407A02-01	
Aluminum			1,870	11,100	10,100	9,070	4,800					
Antimony			1U	1U	1U	1U	1U					
Arsenic			1U	5U	1	5	2					
Beryllium			0.4U	0.6	0.6	0.7	0.4U					
Cadmium			1.1	1.3	0.8U	0.8U	1.3					
Chromium			3	17	17	16	7					
Copper			53	56	19	76	50					
Lead			5.5	26	1.3	36	7.5					
Mercury			0.1U	0.1U	0.1U	0.1U	0.1U					
Nickel			6U	16	11	14	9					
Selenium			0.8U	0.8U	0.8U	0.8U	0.8U					
Silver			N/A	N/A	N/A	N/A	N/A					
Thallium			0.4U	0.4U	0.4U	0.4U	0.4U					
Zinc			48	70	43	135	53					

U - Indicates compound analyzed for but not detected.

SD - Sediment

DUP - Duplicate  
mg/kg - milligrams per kilogram

**Table J.6**  
**Analytical Results of SVOCs and Metals in Soil Samples at Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs	Location No.:	017-021BH 1.5 - 2	017-021BH 5 - 5.5
	Sample Date:	5/19/95	5/19/95
	Lab Sample No.:	9505766-02	9505766-03
	Matrix:	Soil	Soil
Acenaphthene		330 U	330 U
Acenaphthylene		330 U	330 U
Aniline		330 U	330 U
Anthracene		330 U	330 U
Benzo(a)anthracene		330 U	330 U
Benzo(b)fluoranthene		330 U	330 U
Benzo(k)fluoranthene		330 U	330 U
Benzo(a)pyrene		330 U	330 U
Benzoic acid		1,600 U	1,600 U
Benzo(g,h,i)perylene		330 U	330 U
Benzyl alcohol		330 U	330 U
4-Bromophenylphenyl ether		330 U	330 U
Butylbenzylphthalate		330 U	330 U
Di-n-butyl phthalate		330 U	330 U
Carbazole		330 U	330 U
4-Chloroaniline		330 U	330 U
Bis(2-chloroethoxy)methane		330 U	330 U
Bis(2-chloroethyl)ether		330 U	330 U
Bis(2-chloroisopropyl)ether		330 U	330 U
4-Chloro-3-methylphenol		330 U	330 U
2-Chloronaphthalene		330 U	330 U
2-Chlorophenol		330 U	330 U
4-Chlorophenylphenyl ether		330 U	330 U
Chrysene		330 U	330 U
Dibenz(a,h)anthracene		330 U	330 U
Dibenzofuran		330 U	330 U
1,2-Dichlorobenzene		330 U	330 U
1,3-Dichlorobenzene		330 U	330 U
1,4-Dichlorobenzene		330 U	330 U
3,3'-Dichlorobenzidine		330 U	330 U
2,4-Dichlorophenol		330 U	330 U
Diethylphthalate		330 U	330 U
2,4-Dimethylphenol		330 U	330 U
Dimethyl phthalate		330 U	330 U
4,6-Dinitro-2-methylphenol		800 U	800 U
2,4-Dinitrophenol		800 U	800 U

**Table J.6**  
**Analytical Results of SVOCs and Metals in Soil Samples at Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs	Location No.:	017-021BH 1.5 - 2	017-021BH 5 - 5.5
	Sample Date:	5/19/95	5/19/95
	Lab Sample No.:	9505766-02	9505766-03
	Matrix:	Soil	Soil
2,4-Dinitrotoluene		330 U	330 U
2,6-Dinitrotoluene		330 U	330 U
1,2-Diphenylhydrazine		330 U	330 U
Bis(2-ethylhexyl)phthalate		330 U	330 U
Fluoranthene		330 U	330 U
Fluorene		330 U	330 U
Hexachlorobenzene		330 U	330 U
Hexachlorobutadiene		330 U	330 U
Hexachloroethane		330 U	330 U
Hexachlorocyclopentadiene		330 U	330 U
Indeno(1,2,3-cd)pyrene		330 U	330 U
Isophorone		330 U	330 U
2-Methylnaphthalene		330 U	330 U
2-Methylphenol		330 U	330 U
4-Methylphenol		330 U	330 U
Naphthalene		330 U	330 U
2-Nitroaniline		800 U	800 U
3-Nitroaniline		800 U	800 U
4-Nitroaniline		800 U	800 U
Nitrobenzene		330 U	330 U
2-Nitrophenol		330 U	330 U
4-Nitrophenol		800 U	800 U
N-Nitrosodiphenylamine (1)		330 U	330 U
N-Nitroso-di-n-propylamine		330 U	330 U
Di-n-octyl phthalate		330 U	330 U
Pentachlorophenol		800 U	800 U
Phenanthrene		330 U	330 U
Phenol		330 U	330 U
Pyrene		330 U	330 U
Pyridine		330 U	330 U
1,2,4-Trichlorobenzene		330 U	330 U
2,4,5-Trichlorophenol		800 U	800 U
2,4,6-Trichlorophenol		330 U	330 U
Metals	Location No.:	017-021BH 1.5 - 2	017-021BH 5 - 5.5
	Sample Date:	5/19/95	5/19/95
	Lab Sample No.:	9505766-02	9505766-03
	Matrix:	Soil	Soil
Mercury, Total		0.4 U	0.4 U

**Table J.6**  
**Analytical Results of SVOCs and Metals in Soil Samples at Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

	Location No.:	017-022BH 1.5 - 2	017-023BH 1.5 - 2	017-023BH 5 - 5.5
	Sample Date:	5/17/95	5/17/95	5/17/95
	Lab Sample No.:	9505673-09	9505673-10	9505673-11
SVOCs	Matrix:	Soil	Soil	Soil
Acenaphthene		3,300 U	330 U	330 U
Acenaphthylene		3,300 U	330 U	330 U
Aniline		3,300 U	330 U	330 U
Anthracene		3,300 U	330 U	330 U
Benzo(a)anthracene		3,300 U	330 U	330 U
Benzo(b)fluoranthene		3,300 U	330 U	330 U
Benzo(k)fluoranthene		3,300 U	330 U	330 U
Benzo(a)pyrene		3,300 U	330 U	330 U
Benzoic acid		16,000 U	1,600 U	1,600 U
Benzo(g,h,i)perylene		3,300 U	330 U	330 U
Benzyl alcohol		3,300 U	330 U	330 U
4-Bromophenylphenyl ether		3,300 U	330 U	330 U
Butylbenzylphthalate		3,300 U	330 U	330 U
Di-n-butyl phthalate		3,300 U	330 U	330 U
Carbazole		3,300 U	330 U	330 U
4-Chloroaniline		3,300 U	330 U	330 U
Bis(2-chloroethoxy)methane		3,300 U	330 U	330 U
Bis(2-chloroethyl)ether		3,300 U	330 U	330 U
Bis(2-chloroisopropyl)ether		3,300 U	330 U	330 U
4-Chloro-3-methylphenol		3,300 U	330 U	330 U
2-Chloronaphthalene		3,300 U	330 U	330 U
2-Chlorophenol		3,300 U	330 U	330 U
4-Chlorophenylphenyl ether		3,300 U	330 U	330 U
Chrysene		3,300 U	330 U	330 U
Dibenz(a,h)anthracene		3,300 U	330 U	330 U
Dibenzofuran		3,300 U	330 U	330 U
1,2-Dichlorobenzene		3,300 U	330 U	330 U
1,3-Dichlorobenzene		3,300 U	330 U	330 U
1,4-Dichlorobenzene		3,300 U	330 U	330 U
3,3'-Dichlorobenzidine		3,300 U	330 U	330 U
2,4-Dichlorophenol		3,300 U	330 U	330 U
Diethylphthalate		3,300 U	330 U	330 U
2,4-Dimethylphenol		3,300 U	330 U	330 U
Dimethyl Phthalate		3,300 U	330 U	330 U
4,6-Dinitro-2-methylphenol		8,000 U	800 U	800 U
2,4-Dinitrophenol		8,000 U	800 U	800 U

**Table J.6**  
**Analytical Results of SVOCs and Metals in Soil Samples at Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs	Location No.:	017-022BH 1.5 - 2	017-023BH 1.5 - 2	017-023BH 5 - 5.5
	Sample Date:	5/17/95	5/17/95	5/17/95
	Lab Sample No.:	9505673-09	9505673-10	9505673-11
	Matrix:	Soil	Soil	Soil
2,4-Dinitrotoluene		3,300 U	330 U	330 U
2,6-Dinitrotoluene		3,300 U	330 U	330 U
1,2-Diphenylhydrazine		3,300 U	330 U	330 U
Bis(2-ethylhexyl)phthalate		3,300 U	330 U	330 U
Fluoranthene		3,300 U	330 U	330 U
Fluorene		3,300 U	330 U	330 U
Hexachlorobenzene		3,300 U	330 U	330 U
Hexachlorobutadiene		3,300 U	330 U	330 U
Hexachloroethane		3,300 U	330 U	330 U
Hexachlorocyclopentadiene		3,300 U	330 U	330 U
Indeno(1,2,3-cd)pyrene		3,300 U	330 U	330 U
Isophorone		3,300 U	330 U	330 U
2-Methylnaphthalene		3,300 U	330 U	330 U
2-Methylphenol		3,300 U	330 U	330 U
4-Methylphenol		3,300 U	330 U	330 U
Naphthalene		3,300 U	330 U	330 U
2-Nitroaniline		8,000 U	800 U	800 U
3-Nitroaniline		8,000 U	800 U	800 U
4-Nitroaniline		8,000 U	800 U	800 U
Nitrobenzene		3,300 U	330 U	330 U
2-Nitrophenol		3,300 U	330 U	330 U
4-Nitrophenol		8,000 U	800 U	800 U
N-Nitrosodiphenylamine (1)		3,300 U	330 U	330 U
N-Nitroso-di-n-propylamine		3,300 U	330 U	330 U
Di-n-octyl phthalate		3,300 U	330 U	330 U
Pentachlorophenol		8,000 U	800 U	800 U
Phenanthrene		3,300 U	330 U	330 U
Phenol		3,300 U	330 U	330 U
Pyrene		3,300 U	330 U	330 U
Pyridine		3,300 U	330 U	330 U
1,2,4-Trichlorobenzene		3,300 U	330 U	330 U
2,4,5-Trichlorophenol		8,000 U	800 U	800 U
2,4,6-Trichlorophenol		3,300 U	330 U	330 U
Metals	Location No.:	017-022BH 1.5 - 2	017-023BH 1.5 - 2	017-023BH 5 - 5.5
	Sample Date:	5/17/95	5/17/95	5/17/95
	Lab Sample No.:	9505673-09	9505673-10	9505673-11
	Matrix:	Soil	Soil	Soil
Mercury, Total		0.1 U	0.1 U	0.1 U

**Table J.6**  
**Analytical Results of SVOCs and Metals in Soil Samples at Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

	Location No.:	017-024BH 2 - 2.5	017-024BH 5.5 - 6	017-025BH 2 - 2.5
	Sample Date:	5/17/95	5/17/95	5/17/95
	Lab Sample No.:	9505673-05	9505673-06	9505673-07
SVOCs	Matrix:	Soil	Soil	Soil
Acenaphthene		3,300 U	3,300 U	3,300 U
Acenaphthylene		3,300 U	3,300 U	3,300 U
Aniline		3,300 U	3,300 U	3,300 U
Anthracene		3,300 U	3,300 U	3,300 U
Benzo(a)anthracene		3,300 U	3,300 U	3,300 U
Benzo(b)fluoranthene		3,300 U	3,300 U	3,300 U
Benzo(k)fluoranthene		3,300 U	3,300 U	3,300 U
Benzo(a)pyrene		3,300 U	3,300 U	3,300 U
Benzoic acid		16,000 U	16,000 U	16,000 U
Benzo(g,h,i)perylene		3,300 U	3,300 U	3,300 U
Benzyl alcohol		3,300 U	3,300 U	3,300 U
4-Bromophenylphenyl ether		3,300 U	3,300 U	3,300 U
Butylbenzylphthalate		3,300 U	3,300 U	3,300 U
Di-n-butyl phthalate		3,300 U	3,300 U	3,300 U
Carbazole		3,300 U	3,300 U	3,300 U
4-Chloroaniline		3,300 U	3,300 U	3,300 U
Bis(2-chloroethoxy)methane		3,300 U	3,300 U	3,300 U
Bis(2-chloroethyl)ether		3,300 U	3,300 U	3,300 U
Bis(2-chloroisopropyl)ether		3,300 U	3,300 U	3,300 U
4-Chloro-3-methylphenol		3,300 U	3,300 U	3,300 U
2-Chloronaphthalene		3,300 U	3,300 U	3,300 U
2-Chlorophenol		3,300 U	3,300 U	3,300 U
4-Chlorophenylphenyl ether		3,300 U	3,300 U	3,300 U
Chrysene		3,300 U	3,300 U	3,300 U
Dibenz(a,h)anthracene		3,300 U	3,300 U	3,300 U
Dibenzofuran		3,300 U	3,300 U	3,300 U
1,2-Dichlorobenzene		3,300 U	3,300 U	3,300 U
1,3-Dichlorobenzene		3,300 U	3,300 U	3,300 U
1,4-Dichlorobenzene		3,300 U	3,300 U	3,300 U
3,3'-Dichlorobenzidine		3,300 U	3,300 U	3,300 U
2,4-Dichlorophenol		3,300 U	3,300 U	3,300 U
Diethylphthalate		3,300 U	3,300 U	3,300 U
2,4-Dimethylphenol		3,300 U	3,300 U	3,300 U
Dimethyl Phthalate		3,300 U	3,300 U	3,300 U
4,6-Dinitro-2-methylphenol		8,000 U	8,000 U	8,000 U
2,4-Dinitrophenol		8,000 U	8,000 U	8,000 U

**Table J.6**  
**Analytical Results of SVOCs and Metals in Soil Samples at Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

	Location No.:	017-024BH 2 - 2.5	017-024BH 5.5 - 6	017-025BH 2 - 2.5
	Sample Date:	5/17/95	5/17/95	5/17/95
	Lab Sample No.:	9505673-05	9505673-06	9505673-07
SVOCs	Matrix:	Soil	Soil	Soil
2,4-Dinitrotoluene		3,300 U	3,300 U	3,300 U
2,6-Dinitrotoluene		3,300 U	3,300 U	3,300 U
1,2-Diphenylhydrazine		3,300 U	3,300 U	3,300 U
Bis(2-ethylhexyl)phthalate		3,300 U	3,300 U	3,300 U
Fluoranthene		3,300 U	3,300 U	6,000
Fluorene		3,300 U	3,300 U	3,300 U
Hexachlorobenzene		3,300 U	3,300 U	3,300 U
Hexachlorobutadiene		3,300 U	3,300 U	3,300 U
Hexachloroethane		3,300 U	3,300 U	3,300 U
Hexachlorocyclopentadiene		3,300 U	3,300 U	3,300 U
Indeno(1,2,3-cd)pyrene		3,300 U	3,300 U	3,300 U
Isophorone		3,300 U	3,300 U	3,300 U
2-Methylnaphthalene		3,300 U	3,300 U	3,300 U
2-Methylphenol		3,300 U	3,300 U	3,300 U
4-Methylphenol		3,300 U	3,300 U	3,300 U
Naphthalene		3,300 U	3,300 U	3,300 U
2-Nitroaniline		8,000 U	8,000 U	8,000 U
3-Nitroaniline		8,000 U	8,000 U	8,000 U
4-Nitroaniline		8,000 U	8,000 U	8,000 U
Nitrobenzene		3,300 U	3,300 U	3,300 U
2-Nitrophenol		3,300 U	3,300 U	3,300 U
4-Nitrophenol		8,000 U	8,000 U	8,000 U
N-Nitrosodiphenylamine (1)		3,300 U	3,300 U	3,300 U
N-Nitroso-di-n-propylamine		3,300 U	3,300 U	3,300 U
Di-n-octyl phthalate		3,300 U	3,300 U	3,300 U
Pentachlorophenol		8,000 U	8,000 U	8,000 U
Phenanthrene		3,300 U	3,300 U	4,400
Phenol		3,300 U	3,300 U	3,300 U
Pyrene		3,300 U	3,300 U	4,300
Pyridine		3,300 U	3,300 U	3,300 U
1,2,4-Trichlorobenzene		3,300 U	3,300 U	3,300 U
2,4,5-Trichlorophenol		8,000 U	8,000 U	8,000 U
2,4,6-Trichlorophenol		3,300 U	3,300 U	3,300 U
	Location No.:	017-024BH 2 - 2.5	017-024BH 5.5 - 6	017-025BH 2 - 2.5
	Sample Date:	5/17/95	5/17/95	5/17/95
	Lab Sample No.:	9505673-05	9505673-06	9505673-07
Metals	Matrix:	Soil	Soil	Soil
Mercury, Total		0.1 U	0.2	0.1 U



**Table J.6**  
**Analytical Results of SVOCs and Metals in Soil Samples at Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

	Location No.:	017-025BH 5 - 5.5	017-028BH 1.5 - 2	017-028BH 5 - 5.5
	Sample Date:	5/17/95	5/17/95	5/17/95
	Lab Sample No.:	9505673-08	9505673-12	9505673-13
SVOCs	Matrix:	Soil	Soil	Soil
Acenaphthene		3,300 U	3,300 U	3,300 U
Acenaphthylene		3,300 U	3,300 U	3,300 U
Aniline		3,300 U	3,300 U	3,300 U
Anthracene		3,300 U	3,300 U	3,300 U
Benzo(a)anthracene		3,300 U	3,300 U	3,300 U
Benzo(b)fluoranthene		3,300 U	3,300 U	3,300 U
Benzo(k)fluoranthene		3,300 U	3,300 U	3,300 U
Benzo(a)pyrene		3,300 U	3,300 U	3,300 U
Benzoic acid		16,000 U	16,000 U	16,000 U
Benzo(g,h,i)perylene		3,300 U	3,300 U	3,300 U
Benzyl alcohol		3,300 U	3,300 U	3,300 U
4-Bromophenylphenyl ether		3,300 U	3,300 U	3,300 U
Butylbenzylphthalate		3,300 U	3,300 U	3,300 U
Di-n-butyl phthalate		3,300 U	3,300 U	3,300 U
Carbazole		3,300 U	3,300 U	3,300 U
4-Chloroaniline		3,300 U	3,300 U	3,300 U
Bis(2-chloroethoxy)methane		3,300 U	3,300 U	3,300 U
Bis(2-chloroethyl)ether		3,300 U	3,300 U	3,300 U
Bis(2-chloroisopropyl)ether		3,300 U	3,300 U	3,300 U
4-Chloro-3-methylphenol		3,300 U	3,300 U	3,300 U
2-Chloronaphthalene		3,300 U	3,300 U	3,300 U
2-Chlorophenol		3,300 U	3,300 U	3,300 U
4-Chlorophenylphenyl ether		3,300 U	3,300 U	3,300 U
Chrysene		3,300 U	3,300 U	3,300 U
Dibenz(a,h)anthracene		3,300 U	3,300 U	3,300 U
Dibenzofuran		3,300 U	3,300 U	3,300 U
1,2-Dichlorobenzene		3,300 U	3,300 U	3,300 U
1,3-Dichlorobenzene		3,300 U	3,300 U	3,300 U
1,4-Dichlorobenzene		3,300 U	3,300 U	3,300 U
3,3'-Dichlorobenzidine		3,300 U	3,300 U	3,300 U
2,4-Dichlorophenol		3,300 U	3,300 U	3,300 U
Diethylphthalate		3,300 U	3,300 U	3,300 U
2,4-Dimethylphenol		3,300 U	3,300 U	3,300 U
Dimethyl Phthalate		3,300 U	3,300 U	3,300 U
4,6-Dinitro-2-methylphenol		8,000 U	8,000 U	8,000 U
2,4-Dinitrophenol		8,000 U	8,000 U	8,000 U

**Table J.6**  
**Analytical Results of SVOCs and Metals in Soil Samples at Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

	Location No.:	017-025BH 5 - 5.5	017-028BH 1.5 - 2	017-028BH 5 - 5.5
	Sample Date:	5/17/95	5/17/95	5/17/95
	Lab Sample No.:	9505673-08	9505673-12	9505673-13
SVOCs	Matrix:	Soil	Soil	Soil
2,4-Dinitrotoluene		3,300 U	3,300 U	3,300 U
2,6-Dinitrotoluene		3,300 U	3,300 U	3,300 U
1,2-Diphenylhydrazine		3,300 U	3,300 U	3,300 U
Bis(2-ethylhexyl)phthalate		3,300 U	3,300 U	3,300 U
Fluoranthene		3,300 U	3,300 U	3,300 U
Fluorene		3,300 U	3,300 U	3,300 U
Hexachlorobenzene		3,300 U	3,300 U	3,300 U
Hexachlorobutadiene		3,300 U	3,300 U	3,300 U
Hexachloroethane		3,300 U	3,300 U	3,300 U
Hexachlorocyclopentadiene		3,300 U	3,300 U	3,300 U
Indeno(1,2,3-cd)pyrene		3,300 U	3,300 U	3,300 U
Isophorone		3,300 U	3,300 U	3,300 U
2-Methylnaphthalene		3,300 U	3,300 U	3,300 U
2-Methylphenol		3,300 U	3,300 U	3,300 U
4-Methylphenol		3,300 U	3,300 U	3,300 U
Naphthalene		3,300 U	3,300 U	3,300 U
2-Nitroaniline		8,000 U	8,000 U	8,000 U
3-Nitroaniline		8,000 U	8,000 U	8,000 U
4-Nitroaniline		8,000 U	8,000 U	8,000 U
Nitrobenzene		3,300 U	3,300 U	3,300 U
2-Nitrophenol		3,300 U	3,300 U	3,300 U
4-Nitrophenol		8,000 U	8,000 U	8,000 U
N-Nitrosodiphenylamine (1)		3,300 U	3,300 U	3,300 U
N-Nitroso-di-n-propylamine		3,300 U	3,300 U	3,300 U
Di-n-octyl phthalate		3,300 U	3,300 U	3,300 U
Pentachlorophenol		8,000 U	8,000 U	8,000 U
Phenanthrene		3,300 U	3,300 U	3,300 U
Phenol		3,300 U	3,300 U	3,300 U
Pyrene		3,300 U	3,300 U	3,300 U
Pyridine		3,300 U	3,300 U	3,300 U
1,2,4-Trichlorobenzene		3,300 U	3,300 U	3,300 U
2,4,5-Trichlorophenol		8,000 U	8,000 U	8,000 U
2,4,6-Trichlorophenol		3,300 U	3,300 U	3,300 U
	Location No.:	017-025BH 5 - 5.5	017-028BH 1.5 - 2	017-028BH 5 - 5.5
	Sample Date:	5/17/95	5/17/95	5/17/95
	Lab Sample No.:	9505673-08	9505673-12	9505673-13
Metals	Matrix:	Soil	Soil	Soil
Mercury, Total		0.1 U	0.1 U	0.1 U

**Table J.6**  
**Analytical Results of SVOCs and Metals in Soil Samples at Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

	Location No.: Sample Date: Lab Sample No.: Matrix:	017-029BH 1.5 - 2 5/19/95 9505766-04 Soil	017-029BH Duplicate 5/19/95 9505766-11 Soil	017-030BH 1.5 - 2 5/19/95 9505766-05 Soil
SVOCs				
Acenaphthene		330 U	330 U	330 U
Acenaphthylene		330 U	330 U	330 U
Aniline		330 U	330 U	330 U
Anthracene		330 U	330 U	330 U
Benzo(a)anthracene		330 U	330 U	640
Benzo(b)fluoranthene		330 U	330 U	880
Benzo(k)fluoranthene		330 U	330 U	380
Benzo(a)pyrene		330 U	330 U	640
Benzoic acid		1,600 U	1,600 U	1,600 U
Benzo(g,h,i)perylene		330 U	330 U	440
Benzyl alcohol		330 U	330 U	330 U
4-Bromophenylphenyl ether		330 U	330 U	330 U
Butylbenzylphthalate		330 U	330 U	330 U
Di-n-butyl phthalate		330 U	330 U	330 U
Carbazole		330 U	330 U	330 U
4-Chloroaniline		330 U	330 U	330 U
Bis(2-chloroethoxy)methane		330 U	330 U	330 U
Bis(2-chloroethyl)ether		330 U	330 U	330 U
Bis(2-chloroisopropyl)ether		330 U	330 U	330 U
4-Chloro-3-methylphenol		330 U	330 U	330 U
2-Chloronaphthalene		330 U	330 U	330 U
2-Chlorophenol		330 U	330 U	330 U
4-Chlorophenylphenyl ether		330 U	330 U	330 U
Chrysene		330 U	330 U	720
Dibenz(a,h)anthracene		330 U	330 U	330 U
Dibenzofuran		330 U	330 U	330 U
1,2-Dichlorobenzene		330 U	330 U	330 U
1,3-Dichlorobenzene		330 U	330 U	330 U
1,4-Dichlorobenzene		330 U	330 U	330 U
3,3'-Dichlorobenzidine		330 U	330 U	330 U
2,4-Dichlorophenol		330 U	330 U	330 U
Diethylphthalate		330 U	330 U	330 U
2,4-Dimethylphenol		330 U	330 U	330 U
Dimethyl Phthalate		330 U	330 U	330 U
4,6-Dinitro-2-methylphenol		800 U	800 U	800 U
2,4-Dinitrophenol		800 U	800 U	800 U

**Table J.6**  
**Analytical Results of SVOCs and Metals in Soil Samples at Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

	Location No.:	017-029BH 1.5 - 2	017-029BH Duplicate	017-030BH 1.5 - 2
	Sample Date:	5/19/95	5/19/95	5/19/95
	Lab Sample No.:	9505766-04	9505766-11	9505766-05
<b>SVOCs</b>	<b>Matrix:</b>	<b>Soil</b>	<b>Soil</b>	<b>Soil</b>
2,4-Dinitrotoluene		330 U	330 U	330 U
2,6-Dinitrotoluene		330 U	330 U	330 U
1,2-Diphenylhydrazine		330 U	330 U	330 U
Bis(2-ethylhexyl)phthalate		330 U	330 U	330 U
Fluoranthene		330 U	330 U	1,100
Fluorene		330 U	330 U	330 U
Hexachlorobenzene		330 U	330 U	330 U
Hexachlorobutadiene		330 U	330 U	330 U
Hexachloroethane		330 U	330 U	330 U
Hexachlorocyclopentadiene		330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene		330 U	330 U	390
Isophorone		330 U	330 U	330 U
2-Methylnaphthalene		330 U	330 U	330 U
2-Methylphenol		330 U	330 U	330 U
4-Methylphenol		330 U	330 U	330 U
Naphthalene		330 U	330 U	330 U
2-Nitroaniline		800 U	800 U	800 U
3-Nitroaniline		800 U	800 U	800 U
4-Nitroaniline		800 U	800 U	800 U
Nitrobenzene		330 U	330 U	330 U
2-Nitrophenol		330 U	330 U	330 U
4-Nitrophenol		800 U	800 U	800 U
N-Nitrosodiphenylamine (1)		330 U	330 U	330 U
N-Nitroso-di-n-propylamine		330 U	330 U	330 U
Di-n-octyl phthalate		330 U	330 U	330 U
Pentachlorophenol		800 U	800 U	800 U
Phenanthrene		330 U	330 U	1,000
Phenol		330 U	330 U	330 U
Pyrene		330 U	330 U	1,800
Pyridine		330 U	330 U	330 U
1,2,4-Trichlorobenzene		330 U	330 U	330 U
2,4,5-Trichlorophenol		800 U	800 U	800 U
2,4,6-Trichlorophenol		330 U	330 U	330 U
	Location No.:	017-029BH 1.5 - 2	017-029BH Duplicate	017-030BH 1.5 - 2
	Sample Date:	5/19/95	5/19/95	5/19/95
	Lab Sample No.:	9505766-04	9505766-11	9505766-05
<b>Metals</b>	<b>Matrix:</b>	<b>Soil</b>	<b>Soil</b>	<b>Soil</b>
Mercury, Total		0.4 U	0.4 U	0.4 U

**Table J.6**  
**Analytical Results of SVOCs and Metals in Soil Samples at Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs	Location No.: Sample Date: Lab Sample No.: Matrix:	017-031BH 1.5 - 2 5/19/95 9505766-07 Soil	017-031BH 5 - 5.5 5/19/95 9505766-06 Soil	017-032BH 1.5 - 2 5/19/95 9505766-08 Soil
Acenaphthene		660 U	990 U	660 U
Acenaphthylene		660 U	990 U	660 U
Aniline		660 U	990 U	660 U
Anthracene		660 U	990 U	660 U
Benzo(a)anthracene		660 U	990 U	660 U
Benzo(b)fluoranthene		660 U	990 U	660 U
Benzo(k)fluoranthene		660 U	990 U	660 U
Benzo(a)pyrene		660 U	990 U	660 U
Benzoic acid		3,200 U	4,800 U	3,200 U
Benzo(g,h,i)perylene		660 U	990 U	660 U
Benzyl alcohol		660 U	990 U	660 U
4-Bromophenylphenyl ether		660 U	990 U	660 U
Butylbenzylphthalate		660 U	990 U	660 U
Di-n-butyl phthalate		660 U	990 U	660 U
Carbazole		660 U	990 U	660 U
4-Chloroaniline		660 U	990 U	660 U
Bis(2-chloroethoxy)methane		660 U	990 U	660 U
Bis(2-chloroethyl)ether		660 U	990 U	660 U
Bis(2-chloroisopropyl)ether		660 U	990 U	660 U
4-Chloro-3-methylphenol		660 U	990 U	660 U
2-Chloronaphthalene		660 U	990 U	660 U
2-Chlorophenol		660 U	990 U	660 U
4-Chlorophenylphenyl ether		660 U	990 U	660 U
Chrysene		660 U	990 U	660 U
Dibenz(a,h)anthracene		660 U	990 U	660 U
Dibenzofuran		660 U	990 U	660 U
1,2-Dichlorobenzene		660 U	990 U	660 U
1,3-Dichlorobenzene		660 U	990 U	660 U
1,4-Dichlorobenzene		660 U	990 U	660 U
3,3'-Dichlorobenzidine		660 U	990 U	660 U
2,4-Dichlorophenol		660 U	990 U	660 U
Diethylphthalate		660 U	990 U	660 U
2,4-Dimethylphenol		660 U	990 U	660 U
Dimethyl Phthalate		660 U	990 U	660 U
4,6-Dinitro-2-methylphenol		1,600 U	2,400 U	1,600 U
2,4-Dinitrophenol		1,600 U	2,400 U	1,600 U

**Table J.6**  
**Analytical Results of SVOCs and Metals in Soil Samples at Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

	Location No.:	017-031BH 1.5 - 2	017-031BH 5 - 5.5	017-032BH 1.5 - 2
	Sample Date:	5/19/95	5/19/95	5/19/95
	Lab Sample No.:	9505766-07	9505766-06	9505766-08
SVOCs	Matrix:	Soil	Soil	Soil
2,4-Dinitrotoluene		660 U	990 U	660 U
2,6-Dinitrotoluene		660 U	990 U	660 U
1,2-Diphenylhydrazine		660 U	990 U	660 U
Bis(2-ethylhexyl)phthalate		660 U	990 U	660 U
Fluoranthene		660 U	990 U	800
Fluorene		660 U	990 U	660 U
Hexachlorobenzene		660 U	990 U	660 U
Hexachlorobutadiene		660 U	990 U	660 U
Hexachloroethane		660 U	990 U	660 U
Hexachlorocyclopentadiene		660 U	990 U	660 U
Indeno(1,2,3-cd)pyrene		660 U	990 U	660 U
Isophorone		660 U	990 U	660 U
2-Methylnaphthalene		660 U	990 U	660 U
2-Methylphenol		660 U	990 U	660 U
4-Methylphenol		660 U	990 U	660 U
Naphthalene		660 U	990 U	660 U
2-Nitroaniline		1,600 U	2,400 U	1,600 U
3-Nitroaniline		1,600 U	2,400 U	1,600 U
4-Nitroaniline		1,600 U	2,400 U	1,600 U
Nitrobenzene		660 U	990 U	660 U
2-Nitrophenol		660 U	990 U	660 U
4-Nitrophenol		1,600 U	2,400 U	1,600 U
N-Nitrosodiphenylamine (1)		660 U	990 U	660 U
N-Nitroso-di-n-propylamine		660 U	990 U	660 U
Di-n-octyl phthalate		660 U	990 U	660 U
Pentachlorophenol		1,600 U	2,400 U	1,600 U
Phenanthrene		660 U	990 U	1,400
Phenol		660 U	990 U	660 U
Pyrene		790	990 U	1,600
Pyridine		660 U	990 U	660 U
1,2,4-Trichlorobenzene		660 U	990 U	660 U
2,4,5-Trichlorophenol		1,600 U	2,400 U	1,600 U
2,4,6-Trichlorophenol		660 U	990 U	660 U
	Location No.:	017-031BH 1.5 - 2	017-031BH 5 - 5.5	017-032BH 1.5 - 2
	Sample Date:	5/19/95	5/19/95	5/19/95
	Lab Sample No.:	9505766-07	9505766-06	9505766-08
Metals	Matrix:	Soil	Soil	Soil
Mercury, Total		0.4 U	0.4 U	0.4 U

**Table J.7**  
**Analytical Results of TPH in Soil Samples at Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

<b>TPH (mg/kg)</b>	<b>Location No.:</b>	017-022BH 2 - 2.5	017-023BH 2 - 2.5
	<b>Sample Date:</b>	5/17/95	5/17/95
	<b>Lab Sample No.:</b>	2575-95LS	2576-95LS
	<b>Matrix:</b>	Soil	Soil
Gasoline Range Organics		5.0 U	5.0 U
Diesel Range Organics		4.0 U	4.0 U
<b>TPH (mg/kg)</b>	<b>Location No.:</b>	017-023BH 5.5 - 6	017-024BH 1.5 - 2
	<b>Sample Date:</b>	5/17/95	5/17/95
	<b>Lab Sample No.:</b>	2577-95LS	2578-95LS
	<b>Matrix:</b>	Soil	Soil
Gasoline Range Organics		5.0 U	5.0 U
Diesel Range Organics		4.0 U	13.4
<b>TPH (mg/kg)</b>	<b>Location No.:</b>	017-024BH 5 - 5.5	017-025BH 1.5 - 2
	<b>Sample Date:</b>	5/17/95	5/17/95
	<b>Lab Sample No.:</b>	2579-95LS	2580-95LS
	<b>Matrix:</b>	Soil	Soil
Gasoline Range Organics		5.0 U	5.0 U
Diesel Range Organics		70.6	144
<b>TPH (mg/kg)</b>	<b>Location No.:</b>	017-025BH 5.5 - 6	017-031BH 2 - 2.5
	<b>Sample Date:</b>	5/17/95	5/19/95
	<b>Lab Sample No.:</b>	2581-95LS	2621-95LS
	<b>Matrix:</b>	Soil	Soil
Gasoline Range Organics		5.0 U	5.0 U
Diesel Range Organics		9.92	19.3
<b>TPH (mg/kg)</b>	<b>Location No.:</b>	017-031BH 2 - 2.5	017-031BH 5.5 - 6
	<b>Sample Date:</b>	5/19/95	5/19/95
	<b>Lab Sample No.:</b>	2622-95LS	2623-95LS
	<b>Matrix:</b>	Soil	Soil
Gasoline Range Organics		5.0 U	5.0 U
Diesel Range Organics		4.02	41.2
<b>TPH (mg/kg)</b>	<b>Location No.:</b>	017-032BH 2 - 2.5	017-021BH 2 - 2.5
	<b>Sample Date:</b>	5/19/95	5/19/95
	<b>Lab Sample No.:</b>	2624-95LS	2625-95LS
	<b>Matrix:</b>	Soil	Soil
Gasoline Range Organics		5.0 U	5.0 U
Diesel Range Organics		4.0 U	4.0 U
<b>TPH (mg/kg)</b>	<b>Location No.:</b>	017-021BH 5.5 - 6	017-030BH 2 - 2.5
	<b>Sample Date:</b>	5/19/95	5/19/95
	<b>Lab Sample No.:</b>	2626-95LS	2627-95LS
	<b>Matrix:</b>	Soil	Soil
Gasoline Range Organics		5.0 U	5.0 U
Diesel Range Organics		4.0 U	189
<b>TPH (mg/kg)</b>	<b>Location No.:</b>	017-028BH 2 - 2.5	017-028BH 5.5 - 6
	<b>Sample Date:</b>	5/17/95	5/17/95
	<b>Lab Sample No.:</b>	2582-95LS	2583-95LS
	<b>Matrix:</b>	Soil	Soil
Gasoline Range Organics		5.0 U	5.0 U
Diesel Range Organics		4.0 U	4.0 U

**Table J.7**  
**Analytical Results of TPH in Soil Samples at Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

	Location No.:	017-029BH 2 - 2.5	017-029BH 2 - 2.5
	Sample Date:	5/19/95	5/19/95
	Lab Sample No.:	2628-95LS	2629-95LS
TPH (mg/kg)	Matrix:	Soil	Soil
Gasoline Range Organics		5.0 U	5.0 U
Diesel Range Organics		4.2	5.6



**Table J.8**  
**Analytical Results of TPH in Soil Samples at Site No. 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

<b>TPH (mg/kg)</b>	<b>Location No.:</b>	<b>021-026BH 2 - 2.5</b>	<b>021-026BH 9 - 9.5</b>
	<b>Sample Date:</b>	<b>5/16/95</b>	<b>5/16/95</b>
	<b>Lab Sample No.:</b>	<b>2537-95LS</b>	<b>2538-95LS</b>
	<b>Matrix:</b>	<b>Soil</b>	<b>Soil</b>
Gasoline Range Organics		5.0 U	5.0 U
Diesel Range Organics		88.00	8.70
<b>TPH (mg/kg)</b>	<b>Location No.:</b>	<b>021-027BH 2 - 2.5</b>	<b>021-027BH 8 - 9</b>
	<b>Sample Date:</b>	<b>5/16/95</b>	<b>5/16/95</b>
	<b>Lab Sample No.:</b>	<b>2539-95LS</b>	<b>2540-95LS</b>
	<b>Matrix:</b>	<b>Soil</b>	<b>Soil</b>
Gasoline Range Organics		5.0 U	5.0 U
Diesel Range Organics		27.70	29.10
<b>TPH (mg/kg)</b>	<b>Location No.:</b>	<b>021-027BH 9 - 10</b>	<b>021-028BH 2 - 2.5</b>
	<b>Sample Date:</b>	<b>5/16/95</b>	<b>5/16/95</b>
	<b>Lab Sample No.:</b>	<b>2541-95LS</b>	<b>2542-95LS</b>
	<b>Matrix:</b>	<b>Soil</b>	<b>Soil</b>
Gasoline Range Organics		5.0 U	5.0 U
Diesel Range Organics			4.0 U
<b>TPH (mg/kg)</b>	<b>Location No.:</b>	<b>021-028BH 1.5 - 2</b>	<b>021-028BH 5.5 - 6</b>
	<b>Sample Date:</b>	<b>5/16/95</b>	<b>5/16/95</b>
	<b>Lab Sample No.:</b>	<b>2543-95LS</b>	<b>2544-95LS</b>
	<b>Matrix:</b>	<b>Soil</b>	<b>Soil</b>
Gasoline Range Organics		5.0 U	5.0 U
Diesel Range Organics		0.00	6.61

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**APPENDIX K**

**ANALYTICAL RESULTS OF THE QUALITY ASSURANCE/  
QUALITY CONTROL SAMPLES**

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## **SECTION K.1**

### **INTRODUCTION**

Quality Assurance/Quality Control (QA/QC) samples were gathered during soil and water sampling for laboratory analysis by Southern Petroleum Laboratory (SPL) of Houston, Texas. The analytical results are presented in Tables K.1 through K.12.

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**Table K.1**  
**Analytical Results of Trip Blank Samples for Sites 17, 18, and 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-TB01 7/7/94 9407443-13	021-TB 02 7/13/94 9407473-02	021-TB 03 7/14/94 9407567-14	021-TB 03 7/15/94 9407612-06	018-TB 01 7/25/94 9407971-05	Sites 21 10/4/94 9410146-08	Sites 18 & 21 10/5/94 9410180-10	Sites 17, 18, & 21 10/6/94 9410269-10
VOCs (ug/L)	Water	Water	Water	Water	Water	Water	Water	Water
Acetone	10U	10U	10U	10U	10U	10U	10U	10U
Benzene	5U	5U	5U	5U	5U	5U	5U	5U
Bromodichloromethane	5U	5U	5U	5U	5U	5U	5U	5U
Bromoform	5U	5U	5U	5U	5U	5U	5U	5U
Bromomethane	10U	10U	10U	10U	10U	10U	10U	10U
2-Butanone	20U	20U	20U	20U	20U	20U	20U	20U
Carbon Disulfide	5U	5U	5U	5U	5U	5U	5U	5U
Carbon Tetrachloride	5U	5U	5U	5U	5U	5U	5U	5U
Chlorobenzene	5U	5U	5U	5U	5U	5U	5U	5U
Chloroethane	10U	10U	10U	10U	10U	10U	10U	10U
2-Chloroethylvinylether	10U	10U	10U	10U	10U	10U	10U	10U
Chloroform	5U	5U	5U	5U	5U	5U	5U	5U
Chloromethane	10U	10U	10U	10U	10U	10U	10U	10U
Dibromochloromethane	5U	5U	5U	5U	5U	5U	5U	5U
1,1-Dichloroethane	5U	5U	5U	5U	5U	5U	5U	5U
1,1-Dichloroethene	5U	5U	5U	5U	5U	5U	5U	5U
1,2-Dichloroethane	5U	5U	5U	5U	5U	5U	5U	5U
total -1,2-Dichloroethene	5U	5U	5U	5U	5U	5U	5U	5U
1,2-Dichloropropane	5U	5U	5U	5U	5U	5U	5U	5U
cis-1,3-Dichloropropene	5U	5U	5U	5U	5U	5U	5U	5U
trans-1,3-Dichloropropene	5U	5U	5U	5U	5U	5U	5U	5U
Ethylbenzene	5U	5U	5U	5U	5U	5U	5U	5U
2-Hexanone	10U	10U	10U	10U	10U	10U	10U	10U
Methylene Chloride	5U	5U	5U	5U	5U	5U	5U	5U
4-Methyl-2-Pentanone	10U	10U	10U	10U	10U	10U	10U	10U
Styrene	5U	5U	5U	5U	5U	5U	5U	5U
1,1,2,2-Tetrachloroethane	5U	5U	5U	5U	5U	5U	5U	5U
Tetrachloroethene	5U	5U	5U	5U	5U	5U	5U	5U
Toluene	5U	5U	5U	5U	5U	5U	5U	5U
1,1,1-Trichloroethane	5U	5U	5U	5U	5U	5U	5U	5U
1,1,2-Trichloroethane	5U	5U	5U	5U	5U	5U	5U	5U
Trichloroethene	5U	5U	5U	5U	5U	5U	5U	5U
Trichlorofluoromethane	5U	5U	5U	5U	5U	5U	5U	5U
Vinyl Acetate	10U	10U	10U	10U	10U	10U	10U	10U
Vinyl Chloride	10U	10U	10U	10U	10U	10U	10U	10U
Xylenes (total)	5U	5U	5U	5U	5U	5U	5U	5U

U - Indicates compound analyzed for but not detected.  
VOCs - Volatile organic compounds

TB - Trip Blank  
ug/L - micrograms per liter

**Table K.2**  
**Analytical Results of Field Blank Samples for Sites 17, 18, and 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:		DANGB-FB01 10/6/94 9410269-08		DANGB-FB02 10/6/94 9410269-09	
VOCs (ug/L)	Matrix	Water	Water	Water	Water
Acetone		10U		10U	
Benzene		5U		5U	
Bromodichloromethane		5U		5U	
Bromoform		5U		5U	
Bromomethane		10U		10U	
2-Butanone		22		20U	
Carbon Disulfide		5U		5U	
Carbon Tetrachloride		5U		5U	
Chlorobenzene		5U		5U	
Chloroethane		10U		10U	
2-Chloroethylvinylether		10U		10U	
Chloroform		5U		12	
Chloromethane		10U		10U	
Dibromochloromethane		5U		5U	
1,1-Dichloroethane		5U		5U	
1,1-Dichloroethene		5U		5U	
1,2-Dichloroethane		5U		5U	
total -1,2-Dichloroethene		5U		5U	
1,2-Dichloropropane		5U		5U	
cis-1,3-Dichloropropene		5U		5U	
trans-1,3-Dichloropropene		5U		5U	
Ethylbenzene		5U		5U	
2-Hexanone		10U		10U	
Methylene Chloride		5U		5U	
4-Methyl-2-Pentanone		10U		10U	
Styrene		5U		5U	
1,1,2,2-Tetrachloroethane		5U		5U	
Tetrachloroethene		5U		5U	
Toluene		5U		5U	
1,1,1-Trichloroethane		5U		5U	
1,1,2-Trichloroethane		5U		5U	
Trichloroethene		5U		5U	
Trichlorofluoromethane		5U		5U	
Vinyl Acetate		10U		10U	
Vinyl Chloride		10U		10U	
Xylenes (total)		5U		5U	

U - Indicates compound analyzed for but not detected.  
VOCs - Volatile organic compounds  
FB - Field Blank

DANGB - Duluth Air National Guard Base  
ug/L - micrograms per liter



Table K.2  
Analytical Results of Field Blank Samples for Sites 17, 18, and 21  
Minnesota Air National Guard Base  
Duluth, Minnesota

SVOCs (ug/L)	Location No.: DANGB-FB01		DANGB-FB02	
	Sample Date:	10/6/94	10/6/94	10/6/94
	Lab Sample No.:	9410269-08	9410269-09	9410269-09
	Matrix	Water	Water	Water
Acenaphthene		SU	SU	SU
Acenaphthylene		SU	SU	SU
Aniline		SU	SU	SU
Anthracene		SU	SU	SU
Benzo (a) Anthracene		SU	SU	SU
Benzo (b) Fluoranthene		SU	SU	SU
Benzo (k) Fluoranthene		SU	SU	SU
Benzo (a) Pyrene		SU	SU	SU
Benzoic Acid		25U	25U	25U
Benzo(g,h,i)Perylene		SU	SU	SU
Benzyl alcohol		SU	SU	SU
4-Bromophenylphenyl ether		SU	SU	SU
Butylbenzylphthalate		SU	SU	SU
di-n-Butyl phthalate		SU	SU	SU
Carbazole		SU	SU	SU
4-Chloroaniline		SU	SU	SU
bis(2-Chloroethoxy)Methane		SU	SU	SU
bis(2-Chloroethyl)Ether		SU	SU	SU
bis(2-Chloroisopropyl)Ether		SU	SU	SU
4-Chloro-3-Methylphenol		SU	SU	SU
2-Chloronaphthalene		SU	SU	SU
2-Chlorophenol		SU	SU	SU
4-Chlorophenylphenyl ether		SU	SU	SU
Chrysene		SU	SU	SU
Dibenz(a,b)Anthracene		SU	SU	SU
Dibenzofuran		SU	SU	SU
1,2-Dichlorobenzene		SU	SU	SU
1,3-Dichlorobenzene		SU	SU	SU
1,4-Dichlorobenzene		SU	SU	SU
3,3'-Dichlorobenzidine		SU	SU	SU
2,4-Dichlorophenol		SU	SU	SU
Diethylphthalate		SU	SU	SU
2,4-Dimethylphenol		SU	SU	SU
Dimethyl Phthalate		SU	SU	SU

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons  
FB - Field Blank

DANGB - Duluth Air National Guard Base  
ug/L - micrograms per liter  
mg/L - milligrams per liter

**Table K.2**  
**Analytical Results of Field Blank Samples for Sites 17, 18, and 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/L)	Location No.: DANGB-FB01		DANGB-FB02	
	Sample Date:	10/6/94	Sample Date:	10/6/94
	Lab Sample No.:	9410269-08	Lab Sample No.:	9410269-09
	Matrix	Water	Water	Water
4,6-Dinitro-2-Methylphenol		25U	25U	25U
2,4-Dinitrophenol		25U	25U	25U
2,4-Dinitrotoluene		5U	5U	5U
2,6-Dinitrotoluene		5U	5U	5U
1,2-Diphenylhydrazine		5U	5U	5U
bis (2-Ethylhexyl) Phthalate		5U	5U	5U
Fluoranthene		5U	5U	5U
Fluorene		5U	5U	5U
Hexachlorobenzene		5U	5U	5U
Hexachlorobutadiene		5U	5U	5U
Hexachloroethane		5U	5U	5U
Hexachlorocyclopentadiene		5U	5U	5U
Indeno (1,2,3-cd) Pyrene		5U	5U	5U
Isophorone		5U	5U	5U
2-Methylnaphthalene		5U	5U	5U
2-Methylphenol		5U	5U	5U
4-Methylphenol		5U	5U	5U
Naphthalene		5U	5U	5U
2-Nitroaniline		25U	25U	25U
3-Nitroaniline		25U	25U	25U
4-Nitroaniline		25U	25U	25U
Nitrobenzene		5U	5U	5U
2-Nitrophenol		25U	25U	25U
4-Nitrophenol		25U	25U	25U
N-Nitrosodiphenylamine (1)		5U	5U	5U
N-Nitroso-Di-n-Propylamine		5U	5U	5U
Di-n-Octyl Phthalate		5U	5U	5U
Pentachlorophenol		25U	25U	25U
Phenanthrene		5U	5U	5U
Phenol		5U	5U	5U
Pyrene		5U	5U	5U
Pyridine		5U	5U	5U
1,2,4-Trichlorobenzene		5U	5U	5U
2,4,5-Trichlorophenol		10U	10U	10U
2,4,6-Trichlorophenol		5U	5U	5U
TPH (mg/L)		0.5U	0.5U	0.5U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons  
FB - Field Blank

DANGB - Duluth Air National Guard Base  
ug/L - micrograms per liter  
mg/L - milligrams per liter

**Table K.2**  
**Analytical Results of Field Blank Samples for Sites 17, 18, and 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Pesticides/PCBs (ug/L)	Matrix	Location No.:	DANGB-FB01	DANGB-FB02
		Sample Date:	10/6/94	10/6/94
		Lab Sample No.:	9410269-08	9410269-09
			Water	Water
a-BHC			0.02U	0.02U
b-BHC			0.05U	0.05U
d-BHC			0.05U	0.05U
g-BHC			0.03U	0.03U
Heptachlor			0.03U	0.03U
Aldrin			0.02U	0.02U
Heptachlor Epoxide			0.05U	0.05U
Endosulfan I			0.05U	0.05U
Dieldrin			0.01U	0.01U
Endrin			0.04U	0.04U
Endosulfan II			0.03U	0.03U
4,4'-DDT			0.07U	0.07U
Endrin Aldehyde			0.10U	0.10U
Methoxychlor			0.05U	0.05U
a-Chlordane			0.05U	0.05U
g-Chlordane			0.01U	0.01U
4,4'-DDE			0.02U	0.02U
4,4'-DDD			0.10U	0.10U
Endosulfan Sulfate			0.10U	0.10U
Endrin Ketone			0.10U	0.10U
Toxaphene			1.0U	1.0U
Chlordane (technical)			0.05U	0.05U
PCB-1016			0.5U	0.5U
PCB-1221			0.5U	0.5U
PCB-1232			0.5U	0.5U
PCB-1242			0.5U	0.5U
PCB-1248			0.5U	0.5U
PCB-1254			0.5U	0.5U
PCB-1260			0.5U	0.5U

U - Indicates compound analyzed for but not detected.  
PCBs - Polychlorinated biphenyls  
FB - Field Blank

DANGB - Duluth Air National Guard Base  
ug/L - micrograms per liter

Table K.3  
Analytical Results of Field Blank Sample for Site 17  
Minnesota Air National Guard Base  
Duluth, Minnesota

SVOCs (ug/L)	Location No.: 017-FB01	
	Sample Date: 7/25/94	Lab Sample No.: 9407971-06
	Matrix	Water
Acenaphthene		SU
Acenaphthylene		SU
Aniline		SU
Anthracene		SU
Benzo (a) Anthracene		SU
Benzo (b) Fluoranthene		SU
Benzo (k) Fluoranthene		SU
Benzo (a) Pyrene		SU
Benzoic Acid		25U
Benzo(g,h,i)Perylene		SU
Benzyol alcohol		SU
4-Bromophenylphenyl ether		SU
Butylbenzylphthalate		SU
di-n-Butyl phthalate		SU
Carbazole		SU
4-Chloroaniline		SU
bis(2-Chloroethoxy)Methane		SU
bis(2-Chloroethyl)Ether		SU
bis(2-Chloroisopropyl)Ether		SU
4-Chloro-3-Methylphenol		SU
2-Chloronaphthalene		SU
2-Chlorophenol		SU
4-Chlorophenylphenyl ether		SU
Chrysene		SU
Dibenz(a,h)Anthracene		SU
Dibenzofuran		SU
1,2-Dichlorobenzene		SU
1,3-Dichlorobenzene		SU
1,4-Dichlorobenzene		SU
3,3'-Dichlorobenzidine		SU
2,4-Dichlorophenol		SU
Diethylphthalate		SU
2,4-Dimethylphenol		SU
Dimethyl Phthalate		SU
4,6-Dinitro-2-Methylphenol		25U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons

FB - Field Blank  
ug/L - micrograms per liter  
mg/L - milligrams per liter

Table K.3  
Analytical Results of Field Blank Sample for Site 17  
Minnesota Air National Guard Base  
Duluth, Minnesota

SVOCs (ug/L)		Location No.: 017-FB01 Sample Date: 7/25/94 Lab Sample No.: 9407971-06
		Matrix Water
2,4-Dinitrophenol		25U
2,4-Dinitrotoluene		5U
2,6-Dinitrotoluene		5U
1,2-Diphenylhydrazine		5U
bis (2-Ethylhexyl) Phthalate		5U
Fluoranthene		5U
Fluorene		5U
Hexachlorobenzene		5U
Hexachlorobutadiene		5U
Hexachloroethane		5U
Hexachlorocyclopentadiene		5U
Indeno (1,2,3-cd) Pyrene		5U
Isophorone		5U
2-Methylnaphthalene		5U
2-Methylphenol		5U
4-Methylphenol		10U
Naphthalene		5U
2-Nitroaniline		25U
3-Nitroaniline		25U
4-Nitroaniline		25U
Nitrobenzene		5U
2-Nitrophenol		25U
4-Nitrophenol		25U
N-Nitrosodiphenylamine (1)		5U
N-Nitroso-Di-n-Propylamine		5U
Di-n-Octyl Phthalate		5U
Pentachlorophenol		25U
Phenanthrene		5U
Phenol		5U
Pyrene		5U
Pyridine		5U
1,2,4-Trichlorobenzene		5U
2,4,5-Trichlorophenol		10U
2,4,6-Trichlorophenol		5U
TPH (mg/L)		0.5U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons

FB - Field Blank  
ug/L - micrograms per liter  
mg/L - milligrams per liter

**Table K.4**  
**Analytical Results of Field Blank Samples for Site 18**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: 018-FB01		Sample Date: 7/25/94
Lab Sample No.: 9407971-03		
VOCs (ug/L)	Matrix	Water
Acetone		10U
Benzene		5U
Bromodichloromethane		5U
Bromoform		5U
Bromomethane		10U
2-Butanone		20U
Carbon Disulfide		5U
Carbon Tetrachloride		5U
Chlorobenzene		5U
Chloroethane		10U
2-Chloroethylvinylether		10U
Chloroform		5U
Chloromethane		10U
Dibromochloromethane		5U
1,1-Dichloroethane		5U
1,1,1-Dichloroethene		5U
1,2-Dichloroethane		5U
total -1,2-Dichloroethene		5U
1,2-Dichloropropane		5U
cis-1,3-Dichloropropene		5U
trans-1,3-Dichloropropene		5U
Ethylbenzene		5U
2-Hexanone		10U
Methylene Chloride		5U
4-Methyl-2-Pentanone		10U
Styrene		5U
1,1,2,2-Tetrachloroethane		5U
Tetrachloroethene		5U
Toluene		5U
1,1,1-Trichloroethane		5U
1,1,2-Trichloroethane		5U
Trichloroethene		5U
Trichlorofluoromethane		5U
Vinyl Acetate		10U
Vinyl Chloride		10U
Xylenes (total)		5U

U - Indicates compound analyzed for but not detected.  
VOCs - Volatile organic compounds

FB - Field Blank  
ug/L - micrograms per liter

Table K.5

Analytical Results of Field Blank Sample for Site 21  
 Minnesota Air National Guard Base  
 Duluth, Minnesota

Metals (mg/L)		Location No.:	021-FB01
		Sample Date:	7/22/94
		Lab Sample No:	4907999-01
		Matrix	Water
Aluminum			0.09U
Antimony			0.01U
Arsenic			0.01U
Beryllium			0.004U
Cadmium			0.0001U
Chromium			0.002U
Copper			0.01U
Lead			0.003U
Mercury			0.0002U
Nickel			0.002U
Selenium			0.005U
Silver			N/A
Thallium			0.004U
Zinc			0.02U

U - Indicates compound analyzed for but not detected.  
 FB - Field Blank

mg/L - milligrams per liter

**Table K.6**  
**Analytical Results of Equipment Rinseate Blank Samples for Site 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/L)	Location No.:		017-RB 01		017-RB 02		017-RB 03	
	Sample Date:	7/18/94	7/19/94	7/20/94	Sample Date:	7/19/94	7/20/94	9407813-01
Lab Sample No.:	Matrix	Water	Water	Water	Water	Water	Water	Water
Acenaphthene		SU	SU	SU	SU	SU	SU	SU
Acenaphthylene		SU	SU	SU	SU	SU	SU	SU
Aniline		SU	SU	SU	SU	SU	SU	SU
Anthracene		SU	SU	SU	SU	SU	SU	SU
Benzo (a) Anthracene		SU	SU	SU	SU	SU	SU	SU
Benzo (b) Fluoranthene		SU	SU	SU	SU	SU	SU	SU
Benzo (k) Fluoranthene		SU	SU	SU	SU	SU	SU	SU
Benzo (a) Pyrene		SU	SU	SU	SU	SU	SU	SU
Benzoic Acid		25U	25U	25U	25U	25U	25U	25U
Benzo(g,h,i)Perylene		SU	SU	SU	SU	SU	SU	SU
Benzyl alcohol		SU	SU	SU	SU	SU	SU	SU
4-Bromophenylphenyl ether		SU	SU	SU	SU	SU	SU	SU
Butylbenzylphthalate		SU	SU	SU	SU	SU	SU	SU
di-n-Butyl phthalate		SU	SU	SU	SU	SU	SU	SU
Carbazole		SU	SU	SU	SU	SU	SU	SU
4-Chloroaniline		SU	SU	SU	SU	SU	SU	SU
bis(2-Chloroethoxy)Methane		SU	SU	SU	SU	SU	SU	SU
bis(2-Chloroethyl)Ether		SU	SU	SU	SU	SU	SU	SU
bis(2-Chloroisopropyl)Ether		SU	SU	SU	SU	SU	SU	SU
4-Chloro-3-Methylphenol		SU	SU	SU	SU	SU	SU	SU
2-Chloronaphthalene		SU	SU	SU	SU	SU	SU	SU
2-Chlorophenol		SU	SU	SU	SU	SU	SU	SU
4-Chlorophenylphenyl ether		SU	SU	SU	SU	SU	SU	SU
Chrysene		SU	SU	SU	SU	SU	SU	SU
Dibenz(a,h)Anthracene		SU	SU	SU	SU	SU	SU	SU
Dibenzofuran		SU	SU	SU	SU	SU	SU	SU
1,2-Dichlorobenzene		SU	SU	SU	SU	SU	SU	SU
1,3-Dichlorobenzene		SU	SU	SU	SU	SU	SU	SU
1,4-Dichlorobenzene		SU	SU	SU	SU	SU	SU	SU
3,3'-Dichlorobenzidine		SU	SU	SU	SU	SU	SU	SU
2,4-Dichlorophenol		SU	SU	SU	SU	SU	SU	SU
Diethylphthalate		SU	SU	SU	SU	SU	SU	SU
2,4-Dimethylphenol		SU	SU	SU	SU	SU	SU	SU
Dimethyl Phthalate		SU	SU	SU	SU	SU	SU	SU

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons

RB - Rinseate Blank  
ug/L - micrograms per liter  
mg/L - milligrams per liter



**Table K.6**  
**Analytical Results of Equipment Rinseate Blank Samples for Site 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/L)	Location No.: 017-RB 01		017-RB 02		017-RB 03	
	Sample Date: 7/18/94		7/19/94		7/20/94	
Matrix	Lab Sample No.: 9407681-12		9407703-01		9407813-01	
	Water	Water	Water	Water	Water	Water
4,6-Dinitro-2-Methylphenol	25U	25U	25U	25U	25U	25U
2,4-Dinitrophenol	25U	25U	25U	25U	25U	25U
2,4-Dinitrotoluene	5U	5U	5U	5U	5U	5U
2,6-Dinitrotoluene	5U	5U	5U	5U	5U	5U
1,2-Diphenylhydrazine	5U	5U	5U	5U	5U	5U
bis (2-Ethylhexyl) Phthalate	5U	5U	5U	5U	5U	5U
Fluoranthene	5U	5U	5U	5U	5U	5U
Fluorene	5U	5U	5U	5U	5U	5U
Hexachlorobenzene	5U	5U	5U	5U	5U	5U
Hexachlorobutadiene	5U	5U	5U	5U	5U	5U
Hexachloroethane	5U	5U	5U	5U	5U	5U
Hexachlorocyclopentadiene	5U	5U	5U	5U	5U	5U
Indeno (1,2,3-cd) Pyrene	5U	5U	5U	5U	5U	5U
Isophorone	5U	5U	5U	5U	5U	5U
2-Methylnaphthalene	5U	5U	5U	5U	5U	5U
2-Methylphenol	5U	5U	5U	5U	5U	5U
4-Methylphenol	5U	5U	5U	5U	5U	5U
Naphthalene	5U	5U	5U	5U	5U	5U
2-Nitroaniline	25U	25U	25U	25U	25U	25U
3-Nitroaniline	25U	25U	25U	25U	25U	25U
4-Nitroaniline	25U	25U	25U	25U	25U	25U
Nitrobenzene	5U	5U	5U	5U	5U	5U
2-Nitrophenol	5U	5U	5U	5U	5U	5U
4-Nitrophenol	25U	25U	25U	25U	25U	25U
N-Nitrosodiphenylamine (I)	5U	5U	5U	5U	5U	5U
N-Nitroso-Di-n-Propylamine	5U	5U	5U	5U	5U	5U
Di-n-Octyl Phthalate	5U	5U	5U	5U	5U	5U
Pentachlorophenol	25U	25U	25U	25U	25U	25U
Phenanthrene	5U	5U	5U	5U	5U	5U
Phenol	5U	5U	5U	5U	5U	5U
Pyrene	5U	5U	5U	5U	5U	5U
Pyridine	5U	5U	5U	5U	5U	5U
1,2,4-Trichlorobenzene	5U	5U	5U	5U	5U	5U
2,4,5-Trichlorophenol	10U	10U	10U	10U	10U	10U
2,4,6-Trichlorophenol	5U	5U	5U	5U	5U	5U
TPH (mg/L)	0.5U	0.5U	0.5U	0.5U	0.5U	0.5U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons

RB - Rinseate Blank  
ug/L - micrograms per liter  
mg/L - milligrams per liter

**Table K.7**  
**Analytical Results of Equipment Rinseate Blank Samples for Site 18**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:		018-RB 01 7/25/94 9407971-04	018-RB 02 10/5/94 9410180-07
VOCs (ug/L)	Matrix	Water	Water
Acetone		10U	10U
Benzene		5U	5U
Bromodichloromethane		5U	5U
Bromoform		5U	5U
Bromomethane		10U	10U
2-Butanone		20U	20U
Carbon Disulfide		5U	5U
Carbon Tetrachloride		5U	5U
Chlorobenzene		5U	5U
Chloroethane		10U	10U
2-Chloroethylvinylether		10U	10U
Chloroform		5U	5U
Chloromethane		10U	10U
Dibromochloromethane		5U	5U
1,1-Dichloroethane		5U	5U
1,1-Dichloroethene		5U	5U
1,2-Dichloroethane		5U	5U
total -1,2-Dichloroethene		5U	5U
1,2-Dichloropropane		5U	5U
cis-1,3-Dichloropropene		5U	5U
trans-1,3-Dichloropropene		5U	5U
Ethylbenzene		5U	5U
2-Hexanone		10U	10U
Methylene Chloride		5U	5U
4-Methyl-2-Pentanone		10U	10U
Styrene		5U	5U
1,1,2,2-Tetrachloroethane		5U	5U
Tetrachloroethene		5U	5U
Toluene		5U	5U
1,1,1-Trichloroethane		5U	5U
1,1,2-Trichloroethane		5U	5U
Trichloroethene		5U	5U
Trichlorofluoromethane		5U	5U
Vinyl Acetate		10U	10U
Vinyl Chloride		10U	10U
Xylenes (total)		5U	5U

U - Indicates compound analyzed for but not detected.  
VOCs - Volatile organic compounds

RB - Rinseate Blank  
ug/L - micrograms per liter

Table K.8  
Analytical Results of Equipment Rinsate Blank Samples for Site 21  
Minnesota Air National Guard Base  
Duluth, Minnesota

VOCs (ug/L)	Location No.: Sample Date: Lab Sample No.:	021-RB-01 7/13/94 9407473-01	021-RB-02 7/14/94 9407567-13	021-RB-03 7/15/94 9407612-05	021-RB-04 7/22/94 9407999-02	021-RB-05 7/25/94 9407971-02	021-RB-07 10/5/94 9410180-08	021-RB-08 10/6/94 9410269-07
Matrix	Water	Water	Water	Water	Water	Water	Water	Water
Acetone	10U	10U	10U	10U	N/A	10U	10U	10U
Benzene	5U	5U	5U	5U	N/A	5U	5U	5U
Bromodichloromethane	5U	5U	5U	5U	N/A	5U	5U	5U
Bromoform	5U	5U	5U	5U	N/A	5U	5U	5U
Bromomethane	10U	10U	10U	10U	N/A	10U	10U	10U
2-Butanone	20U	20U	20U	20U	N/A	20U	20U	22
Carbon Disulfide	5U	5U	5U	5U	N/A	5U	5U	5U
Carbon Tetrachloride	5U	5U	5U	5U	N/A	5U	5U	5U
Chlorobenzene	5U	5U	5U	5U	N/A	5U	5U	5U
Chloroethane	10U	10U	10U	10U	N/A	10U	10U	10U
2-Chloroethylvinylether	10U	10U	10U	10U	N/A	10U	10U	10U
Chloroform	5U	5U	5U	5U	N/A	5U	5U	5U
Chloromethane	10U	10U	10U	10U	N/A	10U	10U	10U
Dibromochloromethane	5U	5U	5U	5U	N/A	5U	5U	5U
1,1-Dichloroethane	5U	5U	5U	5U	N/A	5U	5U	5U
1,1-Dichloroethene	5U	5U	5U	5U	N/A	5U	5U	5U
1,2-Dichloroethane	5U	5U	5U	5U	N/A	5U	5U	5U
total 1,2-Dichloroethene	5U	5U	5U	5U	N/A	5U	5U	5U
1,2-Dichloropropane	5U	5U	5U	5U	N/A	5U	5U	5U
cis-1,3-Dichloropropene	5U	5U	5U	5U	N/A	5U	5U	5U
trans-1,3-Dichloropropene	5U	5U	5U	5U	N/A	5U	5U	5U
Ethylbenzene	5U	5U	5U	5U	N/A	5U	5U	5U
2-Hexanone	10U	10U	10U	10U	N/A	10U	10U	10U
Methylene Chloride	5U	5U	5U	5U	N/A	5U	5U	5U
4-Methyl-2-Pentanone	10U	10U	10U	10U	N/A	10U	10U	10U
Styrene	5U	5U	5U	5U	N/A	5U	5U	5U
1,1,2,2-Tetrachloroethane	5U	5U	5U	5U	N/A	5U	5U	5U
Tetrachloroethene	5U	5U	5U	5U	N/A	5U	5U	5U
Toluene	5U	5U	5U	5U	N/A	5U	5U	5U
1,1,1-Trichloroethane	5U	5U	5U	5U	N/A	5U	5U	5U
1,1,2-Trichloroethane	5U	5U	5U	5U	N/A	5U	5U	5U
Trichloroethene	5U	5U	5U	5U	N/A	5U	5U	5U
Trichlorofluoromethane	5U	5U	5U	5U	N/A	5U	5U	5U
Vinyl Acetate	10U	10U	10U	10U	N/A	10U	10U	10U
Vinyl Chloride	10U	10U	10U	10U	N/A	10U	10U	10U
Xylenes (total)	5U	5U	5U	5U	N/A	5U	5U	5U

U - Indicates compound analyzed for but not detected.

VOCs - Volatile organic compounds

N/A - Not analyzed

RB - Rinsate Blank  
ug/L - micrograms per liter

Table K.8  
Analytical Results of Equipment Rinseate Blank Samples for Site 21  
Minnesota Air National Guard Base  
Duluth, Minnesota

SVOCs (ug/L)	Location No.:		021-RB 01		021-RB 02		021-RB 03		021-RB 04		021-RB 05		021-RB 07	
	Sample Date:	Matrix	7/13/94	Water	7/14/94	Water	7/15/94	Water	7/22/94	Water	7/25/94	Water	10/5/94	Water
Lab Sample No.:			9407473-01		9407567-13		9407612-05		9407999-02		9407971-02		9410180-08	
Acenaphthene			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Acenaphthylene			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Aniline			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Anthracene			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Benzo (a) Anthracene			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Benzo (b) Fluoranthene			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Benzo (k) Fluoranthene			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Benzo (a) Pyrene			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Benzoic Acid			25U	25U	25U	25U	25U	25U	N/A	25U	25U	25U	25U	25U
Benzo(g,h,i)Perylene			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Benzyl alcohol			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
4-Bromophenylphenyl ether			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Butylbenzylphthalate			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
di-n-Butyl phthalate			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Carbazole			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
4-Chloroaniline			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
bis(2-Chloroethoxy)Methane			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
bis(2-Chloroethyl)Ether			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
bis(2-Chloroisopropyl)Ether			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
4-Chloro-3-Methylphenol			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
2-Chloronaphthalene			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
2-Chlorophenol			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
4-Chlorophenylphenyl ether			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Chrysene			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Dibenz(a,h)Anthracene			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Dibenzofuran			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
1,2-Dichlorobenzene			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
1,3-Dichlorobenzene			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
1,4-Dichlorobenzene			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
3,3'-Dichlorobenzidine			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
2,4-Dichlorophenol			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Diethylphthalate			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
2,4-Dimethylphenol			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU
Dimethyl Phthalate			SU	SU	SU	SU	SU	SU	N/A	SU	SU	SU	SU	SU

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons  
N/A - Not analyzed

RB - Rinseate Blank  
ug/L - micrograms per liter  
mg/L - milligrams per liter

**Table K.8**  
**Analytical Results of Equipment Rinseate Blank Samples for Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/L)	Location No.:		Sample Date:		Lab Sample No.:		021-RB 01		021-RB 02		021-RB 03		021-RB 04		021-RB 05		021-RB 07	
	Matrix	Water	7/13/94	7/14/94	9407473-01	9407567-13	Water	7/15/94	9407612-05	Water	7/22/94	9407999-02	Water	7/25/94	9407971-02	Water	10/5/94	9410180-09
4,6-Dinitro-2-Methylphenol		25U		25U		25U		25U		25U		N/A		25U		25U		25U
2,4-Dinitrophenol		25U		25U		25U		25U		25U		N/A		25U		25U		25U
2,4-Dinitrotoluene		5U		5U		5U		5U		5U		N/A		5U		5U		5U
2,6-Dinitrotoluene		5U		5U		5U		5U		5U		N/A		5U		5U		5U
1,2-Diphenylhydrazine		5U		5U		5U		5U		5U		N/A		5U		5U		5U
bis (2-Ethylhexyl) Phthalate		5U		5U		5U		5U		5U		N/A		5U		5U		8
Fluoranthene		5U		5U		5U		5U		5U		N/A		5U		5U		5U
Fluorene		5U		5U		5U		5U		5U		N/A		5U		5U		5U
Hexachlorobenzene		5U		5U		5U		5U		5U		N/A		5U		5U		5U
Hexachlorobutadiene		5U		5U		5U		5U		5U		N/A		5U		5U		5U
Hexachlorocyclopentadiene		5U		5U		5U		5U		5U		N/A		5U		5U		5U
Indeno (1,2,3-cd) Pyrene		5U		5U		5U		5U		5U		N/A		5U		5U		5U
Isophorone		5U		5U		5U		5U		5U		N/A		5U		5U		5U
2-Methylnaphthalene		5U		5U		5U		5U		5U		N/A		5U		5U		5U
2-Methylphenol		5U		5U		5U		5U		5U		N/A		5U		5U		5U
4-Methylphenol		5U		5U		5U		5U		5U		N/A		5U		5U		5U
Naphthalene		5U		5U		5U		5U		5U		N/A		5U		5U		5U
2-Nitroaniline		25U		25U		25U		25U		25U		N/A		25U		25U		25U
3-Nitroaniline		25U		25U		25U		25U		25U		N/A		25U		25U		25U
4-Nitroaniline		25U		25U		25U		25U		25U		N/A		25U		25U		25U
Nitrobenzene		5U		5U		5U		5U		5U		N/A		5U		5U		5U
2-Nitrophenol		5U		5U		5U		5U		5U		N/A		5U		5U		25U
4-Nitrophenol		25U		25U		25U		25U		25U		N/A		25U		25U		25U
N-Nitrosodiphenylamine (1)		5U		5U		5U		5U		5U		N/A		5U		5U		5U
N-Nitroso-Di-n-Propylamine		5U		5U		5U		5U		5U		N/A		5U		5U		5U
Di-n-Octyl Phthalate		5U		5U		5U		5U		5U		N/A		5U		5U		5U
Pentachlorophenol		25U		25U		25U		25U		25U		N/A		25U		25U		25U
Phenanthrene		5U		5U		5U		5U		5U		N/A		5U		5U		5U
Phenol		5U		5U		5U		5U		5U		N/A		5U		5U		5U
Pyrene		5U		5U		5U		5U		5U		N/A		5U		5U		5U
Pyridine		5U		5U		5U		5U		5U		N/A		5U		5U		5U
1,2,4-Trichlorobenzene		5U		5U		5U		5U		5U		N/A		5U		5U		5U
2,4,5-Trichlorophenol		10U		10U		10U		10U		10U		N/A		10U		10U		10U
2,4,6-Trichlorophenol		5U		5U		5U		5U		5U		N/A		5U		5U		5U
TPH (mg/L)		0.5U		0.5U		0.5U		0.5U		0.5U		N/A		0.5U		0.5U		0.5U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons  
N/A - Not analyzed

RB - Rinseate Blank  
ug/L - micrograms per liter  
mg/L - milligrams per liter

**Table K.8**  
**Analytical Results of Equipment Rinseate Blank Samples for Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Pesticides/PCBs (ug/L)	Location No.:	021-RB 01	021-RB 02	021-RB 03	021-RB 04	021-RB 05	021-RB 07
	Sample Date:	7/13/94	7/14/94	7/15/94	7/22/94	7/25/94	10/5/94
	Lab Sample No.:	9407473-01	9407567-13	9407612-05	9407999-02	9407971-02	9410180-08
	Matrix	Water	Water	Water	Water	Water	Water
a-BHC		0.04U	0.02U	0.02U	N/A	0.02U	0.02U
b-BHC		0.10U	0.05U	0.05U	N/A	0.05U	0.05U
d-BHC		0.10U	0.05U	0.05U	N/A	0.05U	0.05U
g-BHC		0.06U	0.03U	0.03U	N/A	0.03U	0.03U
Heptachlor		0.06U	0.03U	0.03U	N/A	0.03U	0.03U
Aldrin		0.04U	0.02U	0.02U	N/A	0.02U	0.02U
Heptachlor Epoxide		0.10U	0.05U	0.05U	N/A	0.05U	0.05U
Endosulfan I		0.10U	0.05U	0.05U	N/A	0.05U	0.05U
Dieldrin		0.02U	0.01U	0.01U	N/A	0.01U	0.01U
Endrin		0.08U	0.04U	0.04U	N/A	0.04U	0.04U
Endosulfan II		0.06U	0.03U	0.03U	N/A	0.03U	0.03U
4,4'-DDT		0.13U	0.07U	0.07U	N/A	0.07U	0.07U
Endrin Aldehyde		0.19U	0.10U	0.10U	N/A	0.10U	0.10U
Methoxychlor		0.10U	0.05U	0.05U	N/A	0.05U	0.05U
a-Chlordane		0.10U	0.05U	0.05U	N/A	0.05U	0.05U
g-Chlordane		0.02U	0.01U	0.01U	N/A	0.01U	0.01U
4,4'-DDE		0.04U	0.02U	0.02U	N/A	0.02U	0.02U
4,4'-DDD		0.19U	0.10U	0.10U	N/A	0.10U	0.10U
Endosulfan Sulfate		0.19U	0.10U	0.10U	N/A	0.10U	0.10U
Endrin Ketone		0.19U	0.10U	0.10U	N/A	0.10U	0.10U
Toxaphene		1.9U	1.0U	1.0U	N/A	1.0U	1.0U
Chlordane (technical)		0.10U	0.05U	1.7U	N/A	0.05U	0.05U

U - Indicates compound analyzed for but not detected.

PCBs - Polychlorinated biphenyls

N/A - Not analyzed

RB - Rinseate Blank  
 ug/L - micrograms per liter  
 mg/L - milligrams per liter

**Table K.8**  
**Analytical Results of Equipment Rinseate Blank Samples for Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

	Location No.: Sample Date: Lab Sample No.:	021-RB 01 7/13/94 9407473-01		021-RB 02 7/14/94 9407567-13		021-RB 03 7/15/94 9407612-05		021-RB 04 7/22/94 9407999-02		021-RB 05 7/25/94 9407971-02		021-RB 07 10/5/94 9410180-08	
		Water	Matrix	Water	Matrix	Water	Matrix	Water	Matrix	Water	Matrix	Water	Matrix
PCB-1016		1.0U		0.5U		0.5U		N/A		0.5U		0.5U	
PCB-1221		1.0U		0.5U		0.5U		N/A		0.5U		0.5U	
PCB-1232		1.0U		0.5U		0.5U		N/A		0.5U		0.5U	
PCB-1242		1.0U		0.5U		0.5U		N/A		0.5U		0.5U	
PCB-1248		1.0U		0.5U		0.5U		N/A		0.5U		0.5U	
PCB-1254		1.0U		0.5U		0.5U		N/A		0.5U		0.5U	
PCB-1260		1.0U		0.5U		0.5U		N/A		0.5U		0.5U	
<b>Metals (mg/L)</b>													
Aluminum		0.09U		0.11		0.09U		0.09U		0.09U		N/A	
Antimony		0.01U		0.01U		0.01U		0.01U		0.01U		N/A	
Arsenic		0.01U		0.01U		0.01U		0.01U		0.01U		N/A	
Beryllium		0.004U		0.004U		0.004U		0.004U		0.004U		N/A	
Cadmium		0.0001U		0.0001U		0.0001U		0.0002		0.0001U		N/A	
Chromium		0.002U		0.007		0.002U		0.002U		0.002U		N/A	
Copper		0.01U		0.01		0.15		0.01U		0.01U		N/A	
Lead		0.003U		0.003U		0.003U		0.003U		0.003U		N/A	
Mercury		0.0002U		0.0002U		0.0002U		0.0002U		0.0002U		N/A	
Nickel		0.002U		0.002U		0.006		0.002U		0.002U		N/A	
Selenium		0.008U		0.005U		0.005U		0.005U		0.008U		N/A	
Silver		0.006U		0.006U		0.006U		N/A		N/A		N/A	
Thallium		0.004U		0.004U		0.004U		0.004U		0.004U		N/A	
Zinc		0.02U		0.03		0.12		0.62		0.02		N/A	

U - Indicates compound analyzed for but not detected.  
PCBs - Polychlorinated biphenyls  
N/A - Not analyzed

RB - Rinseate Blank  
ug/L - micrograms per liter  
mg/L - milligrams per liter

**Table K.9**  
**Analytical Results of Matrix Spike/Matrix Spike Duplicate Soil Samples at Site 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/kg)	Location No.: 017-13 BH-9 0-9.5 - MS		017-13 BH-9 0-9.5 - MSD		017-017 BH-9 0-9.5 - MS		017-017 BH-9 0-9.5 - MSD		017-017 BH-9 0-9.5 - MSD	
	Matrix	7/18/94	Soil	7/18/94	7/19/94	Soil	7/19/94	Soil	7/19/94	Soil
Acenaphthene		1,800	330U	1,200	1,500	330U	1,300	330U	330U	330U
Acenaphthylene		330U	330U	330U	330U	330U	330U	330U	330U	330U
Aniline		330U	330U	330U	330U	330U	330U	330U	330U	330U
Anthracene		330U	330U	330U	330U	330U	330U	330U	330U	330U
Benzo (a) Anthracene		330U	330U	330U	330U	330U	330U	330U	330U	330U
Benzo (b) Fluoranthene		330U	330U	330U	330U	330U	330U	330U	330U	330U
Benzo (k) Fluoranthene		330U	330U	330U	330U	330U	330U	330U	330U	330U
Benzo (a) Pyrene		330U	330U	330U	330U	330U	330U	330U	330U	330U
Benzoic Acid		1,600U	1,600U	1,600U	1,600U	1,600U	1,600U	1,600U	1,600U	1,600U
Benzo(g,h,i)Perylene		330U	330U	330U	330U	330U	330U	330U	330U	330U
Benzyl alcohol		330U	330U	330U	330U	330U	330U	330U	330U	330U
4-Bromophenylphenyl ether		330U	330U	330U	330U	330U	330U	330U	330U	330U
Butylbenzylphthalate		330U	330U	330U	330U	330U	330U	330U	330U	330U
di-n-Butyl phthalate		330U	330U	330U	330U	330U	330U	330U	330U	330U
Carbazole		330U	330U	330U	330U	330U	330U	330U	330U	330U
4-Chloroaniline		330U	330U	330U	330U	330U	330U	330U	330U	330U
bis(2-Chloroethoxy)Methane		330U	330U	330U	330U	330U	330U	330U	330U	330U
bis(2-Chloroethyl)Ether		330U	330U	330U	330U	330U	330U	330U	330U	330U
bis(2-Chloroisopropyl)Ether		330U	330U	330U	330U	330U	330U	330U	330U	330U
4-Chloro-3-Methylphenol		2,600	1,700	1,700	2,200	2,200	2,200	2,200	2,200	2,200
2-Chloronaphthalene		330U	330U	330U	330U	330U	330U	330U	330U	330U
2-Chlorophenol		2,500	1,700	1,700	1,600	1,600	1,600	1,600	1,600	1,600
4-Chlorophenylphenyl ether		330U	330U	330U	330U	330U	330U	330U	330U	330U
Chrysene		330U	330U	330U	330U	330U	330U	330U	330U	330U
Dibenz(a,h)Anthracene		330U	330U	330U	330U	330U	330U	330U	330U	330U
Dibenzofuran		330U	330U	330U	330U	330U	330U	330U	330U	330U
1,2-Dichlorobenzene		330U	330U	330U	330U	330U	330U	330U	330U	330U
1,3-Dichlorobenzene		330U	330U	330U	330U	330U	330U	330U	330U	330U
1,4-Dichlorobenzene		1,600	1,100	1,100	1,200	1,200	1,200	1,200	1,200	1,200
3,3'-Dichlorobenzidine		330U	330U	330U	330U	330U	330U	330U	330U	330U
2,4-Dichlorophenol		330U	330U	330U	330U	330U	330U	330U	330U	330U
Diethylphthalate		330U	330U	330U	330U	330U	330U	330U	330U	330U
2,4-Dimethylphenol		330U	330U	330U	330U	330U	330U	330U	330U	330U
Dimethyl Phthalate		330U	330U	330U	330U	330U	330U	330U	330U	330U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons

MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram



**Table K.9**  
**Analytical Results of Matrix Spike/Matrix Spike Duplicate Soil Samples at Site 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/kg)	Location No.: 017-13 BH-9.0-9.5 - MS		017-13 BH-9.0-9.5 - MSD		017-017 BH-9.0-9.5 - MS		017-017 BH-9.0-9.5 - MSD	
	Sample Date: 7/18/94	9407680-10	Soil	800U	Sample Date: 7/18/94	9407680-11	Soil	800U
Lab Sample No.:	Matrix							
4,6-Dinitro-2-Methylphenol								
2,4-Dinitrophenol								
2,4-Dinitrotoluene								
2,6-Dinitrotoluene								
1,2-Diphenylhydrazine								
bis (2-Ethylhexyl) Phthalate								
Fluoranthene								
Fluorene								
Hexachlorobenzene								
Hexachlorobutadiene								
Hexachloroethane								
Hexachlorocyclopentadiene								
Indeno (1,2,3-cd) Pyrene								
Isophorone								
2-Methylnaphthalene								
2-Methylphenol								
4-Methylphenol								
Naphthalene								
2-Nitroaniline								
3-Nitroaniline								
4-Nitroaniline								
Nitrobenzene								
2-Nitrophenol								
4-Nitrophenol								
N-Nitrosodiphenylamine (1)								
N-Nitroso-Di-n-Propylamine								
Di-n-Octyl Phthalate								
Pentachlorophenol								
Phenanthrene								
Phenol								
Pyrene								
Pyridine								
1,2,4-Trichlorobenzene								
2,4,5-Trichlorophenol								
2,4,6-Trichlorophenol								
TPH (mg/kg)			430	430			420	400

U - Indicates compound analyzed for but not detected.  
SVOCs - Semi-volatile organic compounds  
TPH - Total petroleum hydrocarbons

MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table K.10**  
**Analytical Results of Matrix Spike/Matrix Spike Duplicate Soil Samples at Site 18**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: 018-006 BH2-0.8-1.3 - MS		018-006 BH2-0.8-1.3 - MSD	
Sample Date: 10/5/04		10/5/04	
Lab Sample No.: 9410180-11		9410180-12	
VOCs (ug/kg)	Matrix	Soil	Soil
Acetone		10U	10U
Benzene		45	44
Bromodichloromethane		5U	5U
Bromoform		5U	5U
Bromomethane		10U	10U
2-Butanone		20U	20U
Carbon Disulfide		5U	5U
Carbon Tetrachloride		5U	5U
Chlorobenzene		42	40
Chloroethane		10U	10U
2-Chloroethylvinylether		10U	10U
Chloroform		5U	5U
Chloromethane		10U	10U
Dibromochloromethane		5U	5U
1,1-Dichloroethane		5U	5U
1,1-Dichloroethene		54	55
1,2-Dichloroethane		5U	5U
total -1,2-Dichloroethene		5U	5U
1,2-Dichloropropane		5U	5U
cis-1,3-Dichloropropene		5U	5U
trans-1,3-Dichloropropene		5U	5U
Ethylbenzene		5U	5U
2-Hexanone		10U	10U
Methylene Chloride		5	5
4-Methyl-2-Pentanone		10U	10U
Styrene		5U	5U
1,1,2,2-Tetrachloroethane		5U	5U
Tetrachloroethene		5U	5U
Toluene		45	48
1,1,1-Trichloroethane		5U	5U
1,1,2-Trichloroethane		5U	5U
Trichloroethene		44	41
Trichlorofluoromethane		5U	5U
Vinyl Acetate		10U	10U
Vinyl Chloride		10U	10U
Xylenes (total)		5U	6

U - Indicates compound analyzed for but not detected.  
VOCs - Volatile organic compounds

MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
ug/kg - micrograms per kilogram

**Table K.11**  
**Analytical Results of Matrix Spike/Matrix Spike Duplicate Soil Samples at Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

VOCs (ug/kg)	Matrix	021-018 BH-10.0-10.5 - MS		021-018 BH-10.0-10.5 - MSD		021-025 BH-14.0-14.5 - MS		021-025 BH-14.0-14.5 - MSD	
		7/14/94	9407567-15	7/14/94	9407567-16	7/12/94	9407405-11	7/12/94	9407443-12
Acetone		11		10U		10U		10U	
Benzene		51		50		52		51	
Bromodichloromethane		5U		5U		5U		5U	
Bromoform		5U		5U		5U		5U	
Bromomethane		10U		10U		10U		10U	
2-Butanone		20U		20U		20U		20U	
Carbon Disulfide		5U		5U		5U		5U	
Carbon Tetrachloride		5U		5U		5U		5U	
Chlorobenzene		50		50		50		50	
Chloroethane		10U		10U		10U		10U	
2-Chloroethylvinylether		10U		10U		10U		10U	
Chloroform		5U		5U		5U		5U	
Chloromethane		10U		10U		10U		10U	
Dibromochloromethane		5U		5U		5U		5U	
1,1-Dichloroethane		5U		5U		5U		5U	
1,1-Dichloroethene		49		50		63		49	
1,2-Dichloroethane		5U		5U		5U		5U	
total -1,2-Dichloroethene		5U		5U		5U		5U	
1,2-Dichloropropane		5U		5U		5U		5U	
cis-1,3-Dichloropropene		5U		5U		5U		5U	
trans-1,3-Dichloropropene		5U		5U		5U		5U	
Ethylbenzene		5U		5U		5U		5U	
2-Hexanone		10U		10U		10U		10U	
Methylene Chloride		5U		5U		5U		5U	
4-Methyl-2-Pentanone		10U		10U		10U		10U	
Styrene		5U		5U		5U		5U	
1,1,2,2-Tetrachloroethane		5U		5U		5U		5U	
Tetrachloroethene		5U		5U		5U		5U	
Toluene		50		50		52		51	
1,1,1-Trichloroethane		5U		5U		5U		5U	
1,1,2-Trichloroethane		5U		5U		5U		5U	
Trichloroethene		49		48		48		48	
Trichlorofluoromethane		5U		5U		5U		5U	
Vinyl Acetate		10U		10U		10U		10U	
Vinyl Chloride		10U		10U		10U		10U	
Xylenes (total)		5U		5U		5U		5U	

U - Indicates compound analyzed for but not detected.  
VOCs - Volatile organic compounds

MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
ug/kg - micrograms per kilogram

Table K.11  
Analytical Results of Matrix Spike/Matrix Spike Duplicate Soil Samples at Site 21  
Minnesota Air National Guard Base  
Duluth, Minnesota

SVOCs (ug/kg)	Location No.: 021-018 BH-10.0-10.5 - MS		021-018 BH-10.0-10.5 - MSD		021-025 BH-14.0-14.5 - MS		021-025 BH-14.0-14.5 - MSD	
	Matrix	Sample Date: 7/14/94	Lab Sample No.: 9407567-15	Soil	Sample Date: 7/12/94	Lab Sample No.: 9407405-11	Soil	Sample Date: 7/12/94
Acenaphthene		1,400		1,500		1,200		1,300
Acenaphthylene		330U		330U		330U		330U
Aniline		330U		330U		330U		330U
Anthracene		330U		330U		330U		330U
Benzo (a) Anthracene		330U		330U		330U		330U
Benzo (b) Fluoranthene		330U		330U		330U		330U
Benzo (k) Fluoranthene		330U		330U		330U		330U
Benzo (a) Pyrene		330U		330U		330U		330U
Benzoic Acid		1,600U		1,600U		1,600U		1,600U
Benzo(g,h,i)Perylene		330U		330U		330U		330U
Benzyl alcohol		330U		330U		330U		330U
4-Bromophenylphenyl ether		330U		330U		330U		330U
Butylbenzylphthalate		330U		330U		330U		330U
di-n-Butyl phthalate		330U		330U		330U		330U
Carbazole		330U		330U		330U		330U
4-Chloroaniline		330U		330U		330U		330U
bis(2-Chloroethoxy)Methane		330U		330U		330U		330U
bis(2-Chloroethyl)Ether		330U		330U		330U		330U
bis(2-Chloroisopropyl)Ether		330U		330U		330U		330U
4-Chloro-3-Methylphenol		1,800		2,000		1,800		1,800
2-Chloronaphthalene		330U		330U		330U		330U
2-Chlorophenol		2,000		2,000		1,700		1,800
4-Chlorophenylphenyl ether		330U		330U		330U		330U
Chrysene		330U		330U		330U		330U
Dibenz(a,h)Anthracene		330U		330U		330U		330U
Dibenzofuran		330U		330U		330U		330U
1,2-Dichlorobenzene		330U		330U		330U		330U
1,3-Dichlorobenzene		330U		330U		330U		330U
1,4-Dichlorobenzene		1,200		1,300		1,000		1,200
3,3'-Dichlorobenzidine		330U		330U		330U		330U
2,4-Dichlorophenol		330U		330U		330U		330U
Diethylphthalate		330U		330U		330U		330U
2,4-Dimethylphenol		330U		330U		330U		330U
Dimethyl Phthalate		330U		330U		330U		330U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons

MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

Table K.11

## Analytical Results of Matrix Spike/Matrix Spike Duplicate Soil Samples at Site 21

Minnesota Air National Guard Base

Duluth, Minnesota

Location No.: 021-018 BH-10-0-10.5 - MS		021-018 BH-10-0-10.5 - MSD		021-025 BH-14-0-14.5 - MS		021-025 BH-14-0-14.5 - MSD	
Sample Date: 7/14/94		7/14/94		7/12/94		7/12/94	
Lab Sample No.: 9407567-15		9407567-16		9407405-11		9407443-12	
SVOCs (ug/kg)	Matrix	Soil	Soil	Soil	Soil	Soil	Soil
4,6-Dinitro-2-Methylphenol		800U	800U	800U	800U	800U	800U
2,4-Dinitrophenol		800U	800U	800U	800U	800U	800U
2,4-Dinitrotoluene		1,100	1,200	1,200	1,100	1,100	1,100
2,6-Dinitrotoluene		330U	330U	330U	330U	330U	330U
1,2-Diphenylhydrazine		330U	330U	330U	330U	330U	330U
bis (2-Ethylhexyl) Phthalate		330U	330U	330U	330U	330U	330U
Fluoranthene		330U	330U	330U	330U	330U	330U
Fluorene		330U	330U	330U	330U	330U	330U
Hexachlorobenzene		330U	330U	330U	330U	330U	330U
Hexachlorobutadiene		330U	330U	330U	330U	330U	330U
Hexachloroethane		330U	330U	330U	330U	330U	330U
Hexachlorocyclopentadiene		330U	330U	330U	330U	330U	330U
Indeno (1,2,3-cd) Pyrene		330U	330U	330U	330U	330U	330U
Isophorone		330U	330U	330U	330U	330U	330U
2-Methylnaphthalene		330U	330U	330U	330U	330U	330U
2-Methylphenol		330U	330U	330U	330U	330U	330U
4-Methylphenol		330U	330U	330U	330U	330U	330U
Naphthalene		330U	330U	330U	330U	330U	330U
2-Nitroaniline		800U	800U	800U	800U	800U	800U
3-Nitroaniline		800U	800U	800U	800U	800U	800U
4-Nitroaniline		800U	800U	800U	800U	800U	800U
Nitrobenzene		330U	330U	330U	330U	330U	330U
2-Nitrophenol		330U	330U	330U	330U	330U	330U
4-Nitrophenol		1,100	1,200	1,200	1,100	1,100	1,100
N-Nitrosodiphenylamine (1)		330U	330U	330U	330U	330U	330U
N-Nitroso-Di-n-Propylamine		1,200	1,300	1,300	1,200	1,200	1,200
Di-n-Octyl Phthalate		330U	330U	330U	330U	330U	330U
Pentachlorophenol		850	1,000	1,000	1,500	1,200	1,200
Phenanthrene		330U	330U	330U	330U	330U	330U
Phenol		2,000	2,200	1,800	2,000	2,000	2,000
Pyrene		1,600	1,700	1,400	1,400	1,400	1,400
Pyridine		330U	330U	330U	330U	330U	330U
1,2,4-Trichlorobenzene		1,400	1,300	1,100	1,100	1,200	1,200
2,4,5-Trichlorophenol		800U	800U	800U	800U	800U	800U
2,4,6-Trichlorophenol		330U	330U	330U	330U	330U	330U
TPH (mg/kg)		15	15	420	410	410	410

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
TPH - Total petroleum hydrocarbons

MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table K.11**  
**Analytical Results of Matrix Spike/Matrix Spike Duplicate Soil Samples at Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-018 BH-10.0-10.5 - MS		021-018 BH-10.0-10.5 - MSD		021-025 BH-14.0-14.5 - MS		021-025 BH-14.0-14.5 - MSD	
	7/14/94	9407567-15	7/14/94	9407567-16	7/12/94	9407405-11	7/12/94	9407443-12
	Matrix	Soil	Matrix	Soil	Matrix	Soil	Matrix	Soil
Pesticides/PCBs (ug/kg)								
a-BHC		0.67U		0.67U		0.67U		0.67U
b-BHC		1.7U		1.7U		1.7U		1.7U
d-BHC		1.7U		1.7U		1.7U		1.7U
g-BHC		16		17		16		16
Heptachlor		17		17		17		17
Aldrin		15		16		16		15
Heptachlor Epoxide		1.7U		1.7U		1.7U		1.7U
Endosulfan I		1.7U		1.7U		1.7U		1.7U
Dieldrin		35		36		35		35
Endrin		39		40		37		38
Endosulfan II		1.0U		1.0U		1.0U		1.0U
4,4'-DDT		30		32		33		34
Endrin Aldehyde		3.3U		3.3U		3.3U		3.3U
Methoxychlor		1.7U		1.7U		1.7U		1.7U
a-Chlordane		0.33U		0.33U		0.33U		0.33U
g-Chlordane		1.7U		1.7U		1.7U		1.7U
4,4'-DDE		0.67U		0.67U		0.67U		0.67U
4,4'-DDD		3.3U		3.3U		3.3U		3.3U
Endosulfan Sulfate		3.3U		3.3U		3.3U		3.3U
Endrin Ketone		3.3U		3.3U		3.3U		3.3U
Toxaphene		33U		33U		33U		33U
Chlordane (technical)		1.7U		1.7U		1.7U		1.7U

U - Indicates compound analyzed for but not detected.  
PCBs - Polychlorinated biphenyls

MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

**Table K.11**  
**Analytical Results of Matrix Spike/Matrix Spike Duplicate Soil Samples at Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: Sample Date: Lab Sample No.:	021-018 BH-10.0-10.5 - MS 7/14/94 9407567-15		021-018 BH-10.0-10.5 - MSD 7/14/94 9407567-16		021-025 BH-14.0-14.5 - MS 7/12/94 9407405-11		021-025 BH-14.0-14.5 - MSD 7/12/94 9407443-12	
	Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
PCB-1016		17U	17U	17U	17U	17U	17U	17U
PCB-1221		17U	17U	17U	17U	17U	17U	17U
PCB-1232		17U	17U	17U	17U	17U	17U	17U
PCB-1242		17U	17U	17U	17U	17U	17U	17U
PCB-1248		17U	17U	17U	17U	17U	17U	17U
PCB-1254		17U	17U	17U	17U	17U	17U	17U
PCB-1260		17U	17U	17U	17U	17U	17U	17U
<b>Metals (mg/kg)</b>								
Aluminum		9,570	12,300	15,200	14,700			
Antimony		5	5	1U	5			
Arsenic		4	4	22	22			
Beryllium		92	88	95.2	94.5			
Cadmium		95.0	94.2	93.2	92.2			
Chromium		108	113	125	121			
Copper		167	172	156	154			
Lead		6.2	6.7	7.4	7.1			
Mercury		1.2	1.2	1.0	0.9			
Nickel		112	116	121	117			
Selenium		1.3	1.5	1.5	1.4			
Silver		91	90	72.4	73.8			
Thallium		0.4U	0.4U	4.6	4.7			
Zinc		128	137	136	136			

MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
ug/kg - micrograms per kilogram  
mg/kg - milligrams per kilogram

U - Indicates compound analyzed for but not detected.  
PCBs - Polychlorinated biphenyls

**Table K.12**  
**Analytical Results of Matrix Spike/Matrix Spike Duplicate Sediment Samples Collected for Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Location No.: 021-004SD-MS Sample Date: 10/4/94 Lab Sample No.: 9410146-06		021-004SD-MSD Sample Date: 10/4/94 Lab Sample No.: 9410146-07	
VOCs (ug/kg)	Matrix	Sediment	Sediment
Acetone		40	34
Benzene		39	40
Bromodichloromethane		5U	5U
Bromoform		5U	5U
Bromomethane		10U	10U
2-Butanone		20U	20U
Carbon Disulfide		5U	5U
Carbon Tetrachloride		5U	5U
Chlorobenzene		28	29
Chloroethane		10U	10U
2-Chloroethylvinylether		10U	10U
Chloroform		5U	5U
Chloromethane		10U	10U
Dibromochloromethane		5U	5U
1,1-Dichloroethane		5U	5U
1,1-Dichloroethene		53	53
1,2-Dichloroethane		5U	5U
total 1,2-Dichloroethene		5U	5U
1,2-Dichloropropane		5U	5U
cis-1,3-Dichloropropene		5U	5U
trans-1,3-Dichloropropene		5U	5U
Ethylbenzene		5U	5U
2-Hexanone		10U	10U
Methylene Chloride		13	16
4-Methyl-2-Pentanone		10U	10U
Styrene		5U	5U
1,1,2,2-Tetrachloroethane		5U	5U
Tetrachloroethene		5U	5U
Toluene		40	40
1,1,1-Trichloroethane		5U	5U
1,1,2-Trichloroethane		5U	5U
Trichloroethene		34	36
Trichlorofluoromethane		5U	5U
Vinyl Acetate		10U	10U
Vinyl Chloride		10U	10U
Xylenes (total)		7	5U

U - Indicates compound analyzed for but not detected.  
VOCs - Volatile organic compounds  
SD - Sediment

MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
ug/kg - micrograms per kilogram



**Table K.12**  
**Analytical Results of Matrix Spike/Matrix Spike Duplicate Sediment Samples Collected for Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs (ug/kg)	Location No.:		021-004SD-MS		021-004SD-MSD	
	Matrix	Sediment	Sample Date:	10/4/94	10/4/94	9410146-07
Acenaphthene		2,600			2,200	
Acenaphthylene		330U			330U	
Aniline		330U			330U	
Anthracene		330U			330U	
Benzo (a) Anthracene		330U			330U	
Benzo (b) Fluoranthene		330U			330U	
Benzo (k) Fluoranthene		330U			330U	
Benzo (a) Pyrene		330U			330U	
Benzoic Acid		1,600U			1,600U	
Benzo(g,h,i)Perylene		330U			330U	
Benzyl alcohol		330U			330U	
4-Bromophenylphenyl ether		330U			330U	
Butylbenzylphthalate		330U			330U	
di-n-Butyl phthalate		330U			330U	
Carbazole		330U			330U	
4-Chloroaniline		330U			330U	
bis(2-Chloroethoxy)Methane		330U			330U	
bis(2-Chloroethyl)Ether		330U			330U	
bis(2-Chloroisopropyl)Ether		330U			330U	
4-Chloro-3-Methylphenol		2,500			2,500	
2-Chloronaphthalene		330U			330U	
2-Chlorophenol		1,900			1,600	
4-Chlorophenylphenyl ether		330U			330U	
Chrysene		330U			330U	
Dibenz(a,h)Anthracene		330U			330U	
Dibenzofuran		330U			330U	
1,2-Dichlorobenzene		330U			330U	
1,3-Dichlorobenzene		330U			330U	
1,4-Dichlorobenzene		1,300			960	
3,3'-Dichlorobenzidine		330U			330U	
2,4-Dichlorophenol		330U			330U	
Diethylphthalate		330U			330U	
2,4-Dimethylphenol		330U			330U	
Dimethyl Phthalate		330U			330U	

U - Indicates compound analyzed for but not detected.  
SVOCs - Semivolatile organic compounds  
SD - Sediment

MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
ug/kg - micrograms per kilogram

**Table K.12**  
**Analytical Results of Matrix Spike/Matrix Spike Duplicate Sediment Samples Collected for Site 21**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

Semi-volatile Organics	Location No.: 021-004SD-MS		021-004SD-MSD	
	Sample Date: 10/4/94	Sample Date: 10/4/94	Sample Date: 10/4/94	Sample Date: 10/4/94
	Lab Sample No.: 9410146-06	Lab Sample No.: 9410146-06	Lab Sample No.: 9410146-07	Lab Sample No.: 9410146-07
	Matrix	Sediment	Matrix	Sediment
4,6-Dinitro-2-Methylphenol		800U		800U
2,4-Dinitrophenol		800U		800U
2,4-Dinitrotoluene		1,500		1,400
2,6-Dinitrotoluene		330U		330U
1,2-Diphenylhydrazine		330U		330U
bis (2-Ethylhexyl) Phthalate		330U		330U
Fluoranthene		330U		330U
Fluorene		330U		330U
Hexachlorobenzene		330U		330U
Hexachlorobutadiene		330U		330U
Hexachloroethane		330U		330U
Hexachlorocyclopentadiene		330U		330U
Indeno (1,2,3-cd) Pyrene		330U		330U
Isophorone		330U		330U
2-Methylnaphthalene		330U		330U
2-Methylphenol		330U		330U
4-Methylphenol		330U		330U
Naphthalene		330U		330U
2-Nitroaniline		330U		330U
3-Nitroaniline		800U		800U
4-Nitroaniline		800U		800U
Nitrobenzene		330U		330U
2-Nitrophenol		330U		330U
4-Nitrophenol		2,400		2,500
N-Nitrosodiphenylamine (1)		330U		330U
N-Nitroso-Di-n-Propylamine		1,800		1,400
Di-n-Octyl Phthalate		330U		330U
Pentachlorophenol		1,200		760J
Phenanthrene		330U		330U
Phenol		2,000		1,800
Pyrene		2,800		2,600
Pyridine		330U		330U
1,2,4-Trichlorobenzene		1,400		1,000
2,4,5-Trichlorophenol		800U		800U
2,4,6-Trichlorophenol		330U		330U

U - Indicates compound analyzed for but not detected.  
SVOCs - Semi-volatile organic compounds  
SD - Sediment

MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
ug/kg - micrograms per kilogram

Table K.12

Analytical Results of Matrix Spike/Matrix Spike Duplicate Sediment Samples Collected for Site 21  
Minnesota Air National Guard Base  
Duluth, Minnesota

Location No.: 021-004SD-MSD		021-004SD-MSD	
Sample Date: 10/4/94		10/4/94	
Lab Sample No.: 9410146-06		9410146-07	
TPH (mg/kg)	Matrix	Sediment	Sediment
		530	530
Pesticides/PCBs (ug/kg)			
a-BHC		0.67U	0.67U
b-BHC		1.7U	1.7U
d-BHC		1.7U	1.7U
g-BHC		16	16
Heptachlor		19	41
Aldrin		17	16
Heptachlor Epoxide		1.7U	1.7U
Endosulfan I		1.7U	1.7U
Dieldrin		32	33
Endrin		39	37
Endosulfan II		1.0U	1.0U
4,4'-DDT		30	25
Endrin Aldehyde		3.3U	3.3U
Methoxychlor		1.7U	1.7U
a-Chlordane		0.33U	0.33U
g-Chlordane		1.7U	1.7U
4,4'-DDE		0.67U	0.67U
4,4'-DDD		3.3U	3.3U
Endosulfan Sulfate		3.3U	3.3U
Endrin Ketone		3.3U	3.3U
Toxaphene		33U	33U
Chlordane (technical)		1.7U	1.7U
PCB-1016		17U	17U
PCB-1221		17U	17U
PCB-1232		17U	17U
PCB-1242		17U	17U
PCB-1248		17U	17U
PCB-1254		17U	17U
PCB-1260		17U	17U

U - Indicates compound analyzed for but not detected.  
TPH - Total petroleum hydrocarbons  
PCBs - Polychlorinated biphenyls  
SD - Sediment

MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
mg/kg - milligrams per kilogram  
ug/kg - micrograms per kilogram

Table K.12  
Analytical Results of Matrix Spike/Matrix Spike Duplicate Sediment Samples Collected for Site 21  
Minnesota Air National Guard Base  
Duluth, Minnesota

Location No.: Sample Date: Lab Sample No:		021-006SD - MS 7/23/94 9407998-14		021-006SD - MSD 7/14/94 9407998-15	
Metals (mg/kg)	Matrix	Soil	Soil	Soil	Soil
Aluminum		9,580	10,600		
Antimony		5	5		
Arsenic		14	15		
Beryllium		94.2	96.0		
Cadmium		92.2	92.9		
Chromium		114	118		
Copper		128	130		
Lead		72	73		
Mercury		1.1	1.1		
Nickel		108	111		
Selenium		2.2	2.2		
Silver		N/A	N/A		
Thallium		5.2	5.1		
Zinc		140	145		

U - Indicates compound analyzed for but not detected.  
SD - Sediment

MS - Matrix Spike  
MSD - Matrix Spike Duplicate  
mg/kg - milligrams per kilogram

**Table K.13**  
**Analytical Results of Water QA/QC Samples**  
**During the May 1995 Sampling Event**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs	Location No.:	017-001RB	017-002RB
	Sample Date:	5/17/95	5/19/95
	Lab Sample No.:	9505673-01	9505766-01
	Matrix:	Water	Water
Acenaphthene		5 U	5 U
Acenaphthylene		5 U	5 U
Aniline		5 U	5 U
Anthracene		5 U	5 U
Benzo(a)anthracene		5 U	5 U
Benzo(b)fluoranthene		5 U	5 U
Benzo(k)fluoranthene		5 U	5 U
Benzo(a)pyrene		5 U	5 U
Benzoic acid		25 U	25 U
Benzo(g,h,i)perylene		5 U	5 U
Benzyl alcohol		5 U	5 U
4-Bromophenylphenyl ether		5 U	5 U
Butylbenzylphthalate		5 U	5 U
Di-n-butyl phthalate		5	5 U
Carbazole		5 U	5 U
4-Chloroaniline		5 U	5 U
Bis(2-chloroethoxy)methane		5 U	5 U
Bis(2-chloroethyl)ether		5 U	5 U
Bis(2-chloroisopropyl)ether		5 U	5 U
4-Chloro-3-methylphenol		5 U	5 U
2-Chloronaphthalene		5 U	5 U
2-Chlorophenol		5 U	5 U
4-chlorophenylphenyl ether		5 U	5 U
Chrysene		5 U	5 U
Dibenz(a,h)anthracene		5 U	5 U
Dibenzofuran		5 U	5 U
1,3-Dichlorobenzene		5 U	5 U
1,4-Dichlorobenzene		5 U	5 U
3,3'-Dichlorobenzidine		5 U	5 U
2,4-Dichlorophenol		5 U	5 U
Diethylphthalate		5 U	5 U
2,4-Dimethylphenol		5 U	5 U
Dimethyl phthalate		5 U	5 U
4,6-Dinitro-2-methylphenol		25 U	25 U
2,4-Dinitrophenol		25 U	25 U
2,4-Dinitrotoluene		5 U	5 U
2,6-Dinitrotoluene		5 U	5 U
1,2-Diphenylhydrazine		5 U	5 U
Bis(2-ethylhexyl)phthalate		5 U	5 U
Fluoranthene		5 U	5 U
Fluorene		5 U	5 U
Hexachlorobenzene		5 U	5 U
Hexachlorobutadiene		5 U	5 U
Hexachloroethane		5 U	5 U
Hexachlorocyclopentadiene		5 U	5 U
Indeno(1,2,3-cd)pyrene		5 U	5 U
Isophorone		5 U	5 U

**Table K.13**  
**Analytical Results of Water QA/QC Samples**  
**During the May 1995 Sampling Event**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs	Location No.:	017-001RB	017-002RB
	Sample Date:	5/17/95	5/19/95
	Lab Sample No.:	9505673-01	9505766-01
	Matrix:	Water	Water
2-Methylnaphthalene		5 U	5 U
2-Methylphenol		5 U	5 U
4-Methylphenol		5 U	5 U
Naphthalene		5 U	5 U
2-Nitroaniline		25 U	25 U
3-Nitroaniline		25 U	25 U
4-Nitroaniline		25 U	25 U
Nitrobenzene		5 U	5 U
2-Nitrophenol		25 U	25 U
4-Nitrophenol		25 U	25 U
N-Nitrosodiphenylamine (1)		5 U	5 U
N-Nitroso-di-n-propylamine		5 U	5 U
Di-n-octyl phthalate		5 U	5 U
Pentachlorophenol		25 U	25 U
Phenanthrene		5 U	5 U
Phenol		5 U	5 U
Pyrene		5 U	5 U
Pyridine		5 U	5 U
1,2,4-Trichlorobenzene		5 U	5 U
2,4,5-Trichlorophenol		10 U	10 U
2,4,6Trichlorophenol		5 U	5 U
Metals	Location No.:	017-001RB	017-002RB
	Sample Date:	5/17/95	5/19/95
	Lab Sample No.:	9505673-01	9505766-01
	Matrix:	Water	Water
Mercury, Total		0.0004 U	0.0004 U

**Table K.14**  
**Analytical Results of Soil QA/QC Matrix Spike/Matrix Spike Duplicate**  
**Sediment Samples Collected for Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs	Location No.:	017-032BH 1.5 - 2 MS	017-032BH 1.5 - 2 MSD
	Sample Date:	5/19/95	5/19/95
	Lab Sample No.:	9505766-09	9505766-10
	Matrix:	Soil	Soil
Acenaphthene		1,600	2,000
Acenaphthylene		660 U	660 U
Aniline		660 U	660 U
Anthracene		660 U	660 U
Benzo(a)anthracene		660 U	810
Benzo(b)fluoranthene		660 U	760
Benzo(k)fluoranthene		660 U	660 U
Benzo(a)pyrene		660 U	760
Benzoic acid		3,200 U	3,200 U
Benzo(g,h,i)perylene		660 U	660 U
Benzyl alcohol		660 U	660 U
4-Bromophenylphenyl ether		660 U	660 U
Butylbenzylphthalate		660 U	660 U
Di-n-butyl phthalate		660 U	660 U
Carbazole		660 U	660 U
4-Chloroaniline		660 U	660 U
Bis(2-chloroethoxy)methane		660 U	660 U
Bis(2-chloroethyl)ether		660 U	660 U
Bis(2-chloroisopropyl)ether		660 U	660 U
4-Chloro-3-methylphenol		2,400	2,600
2-Chloronaphthalene		660 U	660 U
2-Chlorophenol		2,700	3,100
4-Chlorophenylphenyl ether		660 U	660 U
Chrysene		660 U	990
Dibenz(a,h)anthracene		660 U	660 U
Dibenzofuran		660 U	660 U
1,3-Dichlorobenzene		660 U	660 U
1,4-Dichlorobenzene		1,200	1,400
3,3'-Dichlorobenzidine		660 U	660 U
2,4-Dichlorophenol		660 U	660 U
Diethylphthalate		660 U	660 U
2,4-Dimethylphenol		660 U	660 U
Dimethyl phthalate		660 U	660 U
4,6-Dinitro-2-methylphenol		1,600 U	1,600 U
2,4-Dinitrophenol		1,600 U	1,600 U
2,4-Dinitrotoluene		1,200	1,300
2,6-Dinitrotoluene		660 U	660 U
1,2-Diphenylhydrazine		660 U	660 U
Bis(2-ethylhexyl)phthalate		660 U	660 U
Fluoranthene		680	1,200
Fluorene		660 U	660 U
Hexachlorobenzene		660 U	660 U
Hexachlorobutadiene		660 U	660 U
Hexachloroethane		660 U	660 U
Hexachlorocyclopentadiene		660 U	660 U
Indeno(1,2,3-cd)pyrene		660 U	660 U
Isophorone		660 U	660 U

**Table K.14**  
**Analytical Results of Soil QA/QC Matrix Spike/Matrix Spike Duplicate**  
**Sediment Samples Collected for Site No. 17**  
**Minnesota Air National Guard Base**  
**Duluth, Minnesota**

SVOCs	Location No.:	017-032BH 1.5 - 2 MS	017-032BH 1.5 - 2 MSD
	Sample Date:	5/19/95	5/19/95
	Lab Sample No.:	9505766-09	9505766-10
	Matrix:	Soil	Soil
2-Methylnaphthalene		660 U	660 U
2-Methylphenol		660 U	660 U
4-Methylphenol		660 U	660 U
Naphthalene		660 U	660 U
2-Nitroaniline		1,600 U	1,600 U
3-Nitroaniline		1,600 U	1,600 U
4-Nitroaniline		1,600 U	1,600 U
Nitrobenzene		660 U	660 U
2-Nitrophenol		660 U	660 U
4-Nitrophenol		1,900	2,300
N-Nitrosodiphenylamine (1)		660 U	660 U
N-Nitroso-di-n-propylamine		1,400	1,600
Di-n-octyl phthalate		660 U	660 U
Pentachlorophenol		940 J	2,100
Phenanthrene		810	1,700
Phenol		2,200	2,500
Pyrene		3,200	4,600
Pyridine		660 U	660 U
1,2,4-Trichlorobenzene		1,500	1,800
2,4,5-Trichlorophenol		1,600 U	1,600 U
2,4,6Trichlorophenol		660 U	660 U
Metals	Location No.:	017-032BH 1.5 - 2 MS	017-032BH 1.5 - 2 MSD
	Sample Date:	5/19/95	5/19/95
	Lab Sample No.:	9505766-09	9505766-10
	Matrix:	Soil	Soil
Mercury, Total		4.0	4.5



**APPENDIX L**  
**FIELD LOG BOOK DATA**

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## **SECTION L.1**

### **INTRODUCTION**

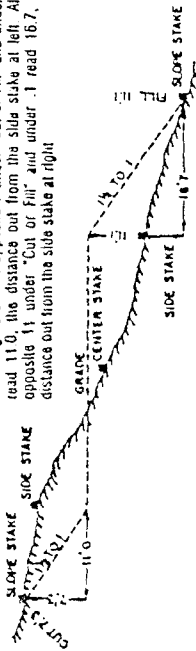
Field log books were attained by OpTech personnel for documentation of the field activities for the Addendum 1 RCRA Facility Investigation at Duluth Air National Guard Base, Duluth, Minnesota. The field work was conducted between 11 July 1994 and 27 July 1994. OpTech returned for recollection of soil, groundwater, and sediment samples between 04 October 1994 and 07 October 1994.

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# DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

In the figure below: opposite 7 under "Cut or Fill" and under 3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under 1 read 16.7, the distance out from the side stake at right.



Cut or Fill	Distance out from Side or Shoulder Stake																Cut or Fill
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	3.1	3.2	3.4	3.5	3.7	3.8	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	4.6	4.7	4.9	5.0	5.2	5.3	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	6.1	6.2	6.4	6.5	6.7	6.8	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	7.6	7.7	7.9	8.0	8.2	8.3	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	9.1	9.2	9.4	9.5	9.7	9.8	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	10.6	10.7	10.9	11.0	11.2	11.3	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	12.1	12.2	12.4	12.5	12.7	12.8	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	13.6	13.7	13.9	14.0	14.2	14.3	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	15.1	15.2	15.4	15.5	15.7	15.8	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	16.6	16.7	16.9	17.0	17.2	17.3	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	18.1	18.2	18.4	18.5	18.7	18.8	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	19.6	19.7	19.9	20.0	20.2	20.3	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	21.1	21.2	21.4	21.5	21.7	21.8	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	22.6	22.7	22.9	23.0	23.2	23.3	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	24.1	24.2	24.4	24.5	24.7	24.8	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	25.6	25.7	25.9	26.0	26.2	26.3	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	27.1	27.2	27.4	27.5	27.7	27.8	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	28.6	28.7	28.9	29.0	29.2	29.3	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	30.1	30.2	30.4	30.5	30.7	30.8	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	31.6	31.7	31.9	32.0	32.2	32.3	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	33.1	33.2	33.4	33.5	33.7	33.8	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	34.6	34.7	34.9	35.0	35.2	35.3	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	36.1	36.2	36.4	36.5	36.7	36.8	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	37.6	37.7	37.9	38.0	38.2	38.3	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	39.1	39.2	39.4	39.5	39.7	39.8	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	40.6	40.7	40.9	41.0	41.2	41.3	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	42.1	42.2	42.4	42.5	42.7	42.8	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	43.6	43.7	43.9	44.0	44.2	44.3	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	45.1	45.2	45.4	45.5	45.7	45.8	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	46.6	46.7	46.9	47.0	47.2	47.3	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	48.1	48.2	48.4	48.5	48.7	48.8	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	49.6	49.7	49.9	50.0	50.2	50.3	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	51.1	51.2	51.4	51.5	51.7	51.8	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	52.6	52.7	52.9	53.0	53.2	53.3	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	54.1	54.2	54.4	54.5	54.7	54.8	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	55.6	55.7	55.9	56.0	56.2	56.3	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	57.1	57.2	57.4	57.5	57.7	57.8	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	58.6	58.7	58.9	59.0	59.2	59.3	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	60.1	60.2	60.4	60.5	60.7	60.8	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	61.6	61.7	61.9	62.0	62.2	62.3	40



"Rite in the Rain"  
ALL-WEATHER WRITING PAPER

Name Kathryn Pritchett  
 Address Operational Technologies Corporation  
4100 N.W. Loop 410 St  
San Antonio, Texas  
 Phone (210) 731-0000  
FAX (210) 731-0008  
 Project Duluth ANG RFI  
Sites 17, 18 and 21  
Addendum 1 Work Plan  
1300-101  
1-800-677-8072

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J.L. DARLING CORPORATION  
TACOMA, WA 98421-3696 USA



2

Lab: SPL Laboratory

Linda

M. Bitten

8870 Ardenhange Dr.  
Houston, Texas 77054

1-800-569-6775

(713) 660-0901

(713) 660-8975

RREMN, Inc.

Norman, B. Livgard

301 West First St., Ste. 418

Duluth, MN 55802

(218) 722-3915

Fax (218) 722-4548

(715) 392-7222

Lt. Col. Michael Washicko

ANLCRC/CEUR

3500 Fitchett Avenue

Dundalk AFB, MD

20531-6008

(301) 981-8844

Capt. Anderson motel

for breakfast

Arrived in Duluth 7/10/94

Joe Byrd

Ruben Torres

via Northwest Kathy Pritchett

7/11/94

SPL Laboratory

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via Northwest Kathy Pritchett

3

7/11/94

Kathryn Pritchett

Joe Byrd

Ruben Torres

Met with Capt. Steven Wilburty

at Headquarters (Bldg. 25)

gave him a copy of the

Addendum 1 to work plan

Dated June 1994

855 - met with Bruce Berg (ext. 244)

at civil engineering for

utilities clearance

900 - Kathryn Pritchett

DPTFCH / Joe Byrd

Ruben Torres

MNANG - Capt. Steven Wilburty

Base CE - Bruce Berg

at Site 21

per Bruce Berg, need to

stake out borehole (soil borings)

and monitor well locations at

Site 21 and Site 17 due to

complex utilities (phone, gas,

water, &amp; electric). Notify him

when they have staked out.

He will call 1-800 number

for phone line clearance at Site 17.

Kathryn Pritchett

4

7/11/94

950 OPTIC Kathryn Pickett  
 WAWO Capt. Steven Wabersky  
 at Site 17 to walk over  
 site.  
 • need to move wooden  
 crates located <sup>near</sup> southwest  
 corner of pad for ore  
 borehole location - will  
 inform DRMO personnel,  
 need to move drum  
 (OPTTECH markings) by monitor  
 well north of pad.  
 • can not filled drums  
 in middle of pad or  
 "holes that are already  
 on the pad.  
 • went into the DRMO bldg  
 to introduce OPTTECH  
 to personnel, also  
 Capt. Steven Wabersky  
 retrieved key to gate at site  
 16  
 1015 OPTTECH Kathryn Pickett  
 WAWO Capt. Steven Wabersky  
 at Site 16 to walk over  
 Kathryn Pickett

5

7/11/94

1115 went to Menard for  
 supplies  
 to lunch  
 1145 Kathryn Pickett  
 Joe Byrd  
 Ruben Torres  
 on Site 21 to stake  
 out soil bungs and set  
 monitor well location.  
 informed Bruce Berg  
 at the Base Level Engineer  
 of Site 21 being staked.  
 1530 — we finished staking  
 the borehole.  
 — walked over ridge  
 → may need to <sup>adjust</sup> proposed  
 location of monitor well due  
 to future road that is plan  
 to go over that location.  
 Went to Huntingdon, La E  
 to pick up methanol, DI water  
 (10 gallons), and 1.7" plastic cap, 1  
 box 2.5" x 6" brass  
 measures. signed to mail at 730  
 to mean clear  
 Kathryn Pickett  
 + <sup>Wabersky</sup> <sup>Byrd</sup>



6

7/11/94

Returned to Hunger 163  
 to pack Ford Explorer  
 for next day.  
 Call SPN Lab. packed  
 to Barbara - could not  
 find trip blanked  
 - the person that packed  
 left the coolers aware that  
 he had packed 4 packages  
 containing 2 1/4 oz vial  
 full of DI water and packed  
 among the 150 40 ml vials  
 packed.

1715

went to Target to purchase  
 supplies

1735

Went to airport to pick  
 up John Morris (OPTech)

~~Kathy Pritchett~~

Tuesday

7/12/94

7

Weather: Nice & cloudy  
 Sunny, Wind 10-15 mph.  
 705 John Morris  
 OPTech  
 Kathryn Pritchett

Joe Boyd  
 Ruden Torres  
 on Site 21 to unload  
 Ford Explorer to set up  
 decontaminated area

745

OPTech  
 John Morris  
 Kathryn Pritchett  
 at Huntington F4 E  
 HHP located at 4444 Airway Blvd.

to observe steam cleaning  
 of drill rig and augers.  
 The drill rig and augers were  
 decontaminated by the following  
 procedure:

- steam cleaning with
  - liquidized air and potable water,
  - rinse with potable water.
- Huntington flooded  
 decontaminating drill rig  
 and augers.

805

Kathy Pritchett

8

7/12/94

Go out to Hays 103  
to pick up water - level  
increased and pick up  
2 bags of ice.

845  
835 OFFER John Morris  
Kathy Pickett

845  
Huntingdon F & E  
at Site 21

850  
consulted with Capt.

Steven Wabrowy about  
if using area below loading  
dock near Site 21 for  
decontamination area for  
argues -- he will check  
with Base civil engineers.  
Consulted with Bruce Berg  
on utility  
clearance at Site 21.  
He has cleared the following.

- 021-021BH
- 021-022BH
- 021-023BH
- 021-024BH

915  
Communication on site  
to check for clearance.  
Kathy Pickett

940

Huntingdon

Steve Stark  
Jim Sargeant  
John Morris

OFFER { Joe Byrd  
Ruelin Torres  
Kathy Pickett

- Health & Safety meeting  
at Site 21

- Health & Safety Officer  
→ Joe Byrd

- Bruce Berg (Base CE)  
cleared 021-025BH

950  
W.L. 13.20' TOC

021-013BH

13.20' TOC

2.50' stick up

10170' BGS

Started Drilling

1015

021-025BH

Collected 0.5' - 2.5'

75% Recovery

Blow 25/115

1020  
Collected Sample 021-025BH-1.5-2.0

Post

UOA

SVOA

TPH

2.5' x 6"

Base

Sleeve

metals

GC-BTEX

Kathy Pickett

915

9

7/12/94

10

7/12/94

PID 0 ppm

ATHS 13.5 ppm

13.5-2.5 Silt; little coarse gravel; granule to cobble size; dry; crumble into hand; roots; medium to dark; mfy yellowish brown

20.1 ppm PID reading

keel open on empty plastic

2 of top bag - ATHS - may be cause of high PID

readings on ATHS of

021-025 BH - 1.5-2.0

Collected 021-025 BH

9-11 ~~7~~ infernal 80% Recovery 10.0-10.5

16 20 21 14

Collected Sample 021-025 BH - 8.40

PID 3.6 ppm

ATHS 17.1 ppm

BC BTEX

Kathy Pintered

9-11

no odor

1110

MS/

MSD

GC

BTEX

ATHS 15.6 ppm

13-13.5

no odor

13.5-

15.0

no odor

7/12/94 11

Silt; trace - little clay; little to some gravel; granule to cobble size; dark yellowish brown; dry; moist at very end; roots; crumble in hand; Collected 021-025 BH

13-15

37816

Collected Sample 021-025 BH - 11.0-

VOA Pest

SVCA TPH

metab

PID

1.1 ppm

13-13.5

Silt; trace to little clay; little gravel; roots; dark yellowish brown to medium grey brown; granule to cobble (gabbers & etc.)

wet; soft; better granular

Silt; little clay; little to some gravel; granules

to cobble; rotter gabbers; wet; brown; dark reddish to yellowish brown

Kathy Pintered

12

7/12/94

1155 Started 021-023BH  
1140 Collected Sample 021-023BH

1140 Collected Sample 021-023BH 1.5-2.0  
2.5" x 6" ~~Do not collect due to poor recovery~~  
Bross Sleeve ~~will collect next hole~~

1140 Collected Sample 021-023BH 1.5-2.0  
2.5" x 6" ~~Do not collect due to poor recovery~~  
Bross Sleeve ~~will collect next hole~~

1140 Collected Sample 021-023BH 1.5-2.0  
2.5" x 6" ~~Do not collect due to poor recovery~~  
Bross Sleeve ~~will collect next hole~~

1140 Collected Sample 021-023BH 1.5-2.0  
2.5" x 6" ~~Do not collect due to poor recovery~~  
Bross Sleeve ~~will collect next hole~~

1200 Collected 10-12' Interval  
1205 Collected Sample 021-023BH-11.0-11.5  
2.5" x 6" GC-BTEX

1205 Collected Sample 021-023BH-11.0-11.5  
2.5" x 6" GC-BTEX

1210 Duplicate 021-023BH-11.5-12.0  
Some analyses Collected

1210 Duplicate 021-023BH-11.5-12.0  
Some analyses Collected

1210 Duplicate 021-023BH-11.5-12.0  
Some analyses Collected

1210 Duplicate 021-023BH-11.5-12.0  
Some analyses Collected

1210 Duplicate 021-023BH-11.5-12.0  
Some analyses Collected

1210 Duplicate 021-023BH-11.5-12.0  
Some analyses Collected

7/12/94 13

1215 Collected 13-15'  
1220 Collected Sample 021-023BH-14.0-14.5  
2.5" x 6" UDA TPH Post GC (BTEX) 14.5'

1215 Collected 13-15'  
1220 Collected Sample 021-023BH-14.0-14.5  
2.5" x 6" UDA TPH Post GC (BTEX) 14.5'

1215 Collected 13-15'  
1220 Collected Sample 021-023BH-14.0-14.5  
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1220 Collected Sample 021-023BH-14.0-14.5  
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1215 Collected 13-15'  
1220 Collected Sample 021-023BH-14.0-14.5  
2.5" x 6" UDA TPH Post GC (BTEX) 14.5'

1215 Collected 13-15'  
1220 Collected Sample 021-023BH-14.0-14.5  
2.5" x 6" UDA TPH Post GC (BTEX) 14.5'

14

1330

7/12/94

6/1 Site 21 for lunch

→ ~~SA~~ Huntington E & E crew left site for lunch?  
→ called Steve Steve at office to connect with him about time to meet back on site → left message → he out of office.

1420

John Morris

Kathryn Patchett

Joe Byrd

Kueben

on Site 21

Huntington E & E crew

Steve Steve is Jim

on Site 21 already

Started 021-022BH

Collected 0.5 - 2.5'

1455 Collected Sample 021-022BH-1.5-2.0

2.5" VOA

X 6" SVOA

metals

Sleeve 5777

TPH.

Post

AT 11.5

led

GC - BTEX

PID 0.8 ppm

% Recovery

Kathryn Patchett

0.5-2.5

Silt

little gravel, granules to

cobbles; dry, moist at upper

interval; sample crumble in hand;

no clay, rotten gravel

col. blebs, clasts; dark reddish-yellow

1515

Collected 5-7' interval

Collected for GC screening

only (BTEX)

PID 21.3 ppm

AT 11.5 472 ppm

361025 55% Recovery

5-7' Silt

little trace clay;

trace gravel; granules to

pebbles; moist to wet;

medium to dark yellowish

brown; firm at lower end

of interval; gravel increases

40% downward; crumble

in hand with light pressure

Collected 10' interval

Collected Sample 021-022BH-11.0-11.5

VOA TPH

SVOA Post

GC - BTEX

Kathryn Patchett

16

7/12/94

PID

42.6 ppm

ATHS

86.6 ppm

12 60 45 41

15% Recovery

10-12

Silt

11

little - some gravel

no other

granule to cobble silt, wet; firm; dark yellowish brown

11-12

Silt; little to coarse sand, increase downward; little gravel; granule to

no other

gravel; granule to cobble; moist - wet; dark yellowish brown

1555

Collected

13-15 ft sand

1600

Collected Sample 021-022 BH-14.0-14.5

2.5" X

10A

TPT

GC-

60"

SVOA

Post

RTX

Bore

metals

Sieve

10 33

27 32

80

Recovery

PID

51.1%

ppm

ATHS

117.1

ppm

Kathy

Pittlett

7/12/94

17

13-15

14.5

Silt and Sand (44)

medium - clay; trace clay; little - some gravel (increase downward); dark yellowish brown

Silt; some sand; some gravel; granule to cobble silt; clay; dark yellowish brown

called SPL lab to order trip blanks - 10 trip blanks

and 4 medium cinders

Shipped (8) subsamples and samples, (1) duplicate, (1) ins/msd, and (1) trip blank to SPL lab via Federal Express

in Bill # 0176013986

Picked up John Morris

(DP TECH) from Site 21

Distance off site - John Morris observed the distance gauging the boreholes that were drilled today.

Cathy Pittlett

18

7/13/94

high 25.00

weather: Sunny, low 60.0;  
slight wind; thunderstorm  
predicted for afternoon

700 OPECH / Kathryn Pritchett  
Reuben Toner

710 on Site 21 to set up  
Steve Stene

Huntington / Jim Sangustad  
on Site 21

715 OPECH / John Moore  
Joe Byrd

OPECH / Joe Byrd (H50)  
Reuben Toner

Huntington / Steve Stene  
Jim Sangustad  
Heath + Safety

melting  
Started 021-021BH  
Collected 0.5 - 2.5  
Antennal

740

741 Collected 46 89  
75% Recovery

PIED 1.7 ppm  
ATHS 3.6 ppm

Ruthy Pritchett

7/13/94 19

750 Collected Sample 021-021BH-  
TPH 1.5  
VOA 2.5  
SVA 2.0  
Post COL - BTEX

Brass sleeve  
metals

0.5 - 2.5 Silt  
trace gravel; granule to  
pebble size; dry; rocks;  
limestone in hand; medium  
reddish - yellowish brown.

800 Collected 5-7' Antennal  
36 11 12 70% Recovery  
PIED 1.9 ppm  
ATHS 5.9 ppm

805 Collected Sample 021-021BH-6.0 -  
2.5" VOA TPH 6.5  
X6" SVA Post  
Brass sleeve metals may not  
seal

5-7' Silt; trace little clay;  
trace - little gravel; granule  
to cobble; wet; fine;  
medium reddish - yellowish  
brown.

Ruthy Pritchett

24

15-17'

AD  
600

1120

Silt

trace to little  
sand; trace  
pebble size  
firm; medium reddish-  
yellowish brown.

Drillers off site  
to get fuel for  
drill rig. Plan to  
decontaminate augers  
when they return to  
site.

1155

OFTECH / John Morris  
Ruben Torres  
Kathryn Pitukett

at Hanger 103 to  
chip GC samples to  
Joe Byrd and set  
up to collect equipment  
waste from stainless-  
steel split spoon.

1330

021-  
RB01

3 - 40 ml. VOA vials  
1 L SVOA  
1 L Post  
1 L TPH  
1 L metals

HCl  
HNO<sub>3</sub>  
Kathryn  
Pitukett

7/13/94

trace to little  
sand; trace  
pebble size  
firm; medium reddish-  
yellowish brown.

Drillers off site  
to get fuel for  
drill rig. Plan to  
decontaminate augers  
when they return to  
site.

OFTECH / John Morris  
Ruben Torres  
Kathryn Pitukett

at Hanger 103 to  
chip GC samples to  
Joe Byrd and set  
up to collect equipment  
waste from stainless-  
steel split spoon.

1330

021-  
RB01

3 - 40 ml. VOA vials  
1 L SVOA  
1 L Post  
1 L TPH  
1 L metals

HCl  
HNO<sub>3</sub>  
Kathryn  
Pitukett

7/13/94

25

OFTECH / Kathryn Pitukett  
Ruben Torres  
on Site 21

- Setting up for drilling  
1435 Started 021-0203H  
1445 Collected 0.5 - 2.5' interval  
1500 34.58 25% Recovery

5689 PID 3.8 1.7 ppm  
1505 AT115 5.3 ppm  
1445 Collected Sample 021-0208H - 1.5 - 2.0

3.5" N/A  
2.5" SVOA  
X6.0" metals  
Buss sleeve

- Rechilled next to  
soil boring due to  
poor recovery

1515 Collected 5-7' interval  
1508H 56.89 75% Recovery  
3533 PID 1.8 ppm

1520 AT115 7.0 ppm  
1505H Collected Sample 021-0208H - 6.0 - 4.5'  
2.5" VOA  
X6" SVOA  
1500 metals  
Sleeve

Post GC - BTEX  
Kathryn Pitukett



22

$$\frac{0.5}{1.0}$$

7/13/94

Silt trace clay; trace  
gravel; pebble size;  
moist - wet soft;  
medium reddish - yellowish  
brown

1.0-2.5

Silt : some sand;  
Trace to little gravel;

22

Apod & granule lenses  
(1-2" thick)

15-16

Silt w/ Sand, wet.  
soft, little organics  
(needs trees?) medium  
reddish - yellowish brown  
peat, loose: medium

6.5-7

fine silt, - dark gray brown;  
fine clay weed fragments: wet

531

Collected 9-11" interval  
12 20 24 32 80% recovery

87 TD

ATHS 7.0 per

Collected sample 021<sup>st</sup> - 02081 -

V.V.A.  
S.V.A.  
M. Hale  
J.P.H.  
10.0  
10.5  
C-BTEV  
Katharine Limited

Business License

Katharine Pitelka

11-9

22

1555

Silt: trace gravel;

22

Silt - trace gravel,  
wet fine; gravel -  
pebble size sand &  
granite lenses -  
trace - little sand, trace  
collected 13-15, clay  
1018 1417 55 % Recovery

11

4-THS

Collected Sample DZ1-020BH-

VCN/	140-145	140-145
------	---------	---------

SVOA	Best
------	------

metals

~~Day Off~~ Did not collect

6C-BTEX Sample

→ forget!

Sill ~~and~~ little to none

Kathryn

28

1740

Shipped (1) equipment  
separate (021-R801),  
part (9) air surface  
oil samples, and (1)  
trip blank bag via  
Federal express

Airbill # 078013986

OPTech Kathryn Pritchett  
Rueben Torres

at Site 7827 to  
take out oil boring  
locations

1915

Left Site 17

17

Kathryn Pritchett

7/13/94

29

7/14/94

Thursday

Weather: cloudy; chance of rain  
(30%); high in 60's.

700 OPTech Kathryn Pritchett  
Rueben Torres

(1) Site 21 to see if  
Joe Byrd (OPTech) taking

John Davis (OPTech) to  
airport

745 Steve Stave

Wilmington Jim Sargestad

OPTech Kathryn Pritchett

Joe Byrd  
Rueben Torres

at Health & Safety

meeting

Started 021-019BH

800 collected 0.5 - 2.0' ~~2.0'~~

11 66 32 50 % Recovery

805 Collected Sample 021-019BH-15-18

1.95

2.5" NGA  
x6" SWA  
Bore

TP11  
Fast  
metals

slow PI 0 1.4 ppm

AT 11.5 1.4 ppm

Kathy Pritchett

7/14/94 31

0.5-2.0 Sand and silt, little gravel, pebble-cobble size, moist - dry, coarse, medium reddish-grey, brown - dark yellowish brown as above; dark yellowish brown just past wet silt, little gravel, cobble size, fine, medium - coarse grey brown, trace - little clay.  
5-6 Same as 5-6, some gravel; pebble size, fine, medium - coarse grey brown, trace - little clay.  
6-7 Same as 5-6, some gravel; pebble size, fine, medium - coarse grey brown, trace - little clay.  
9-9.2 Same as 5-6, some gravel; pebble size, fine, medium - coarse grey brown, trace - little clay.  
9.2-10.3 Silt and clay; soft, medium grey, wet.  
10.3-11.0 Sand and gravel, soft, wet, some gravel, cobble size, some silt.  
13-13.2 Silt and silt, some gravel; wet, soft, loose, medium to dark yellowish brown.  
13.2-15.0 Silt and gravel, some silt, wet, soft, fine, medium to dark yellowish brown.  
slight dip

7/14/94

810 Collected 5-7' 75% Recovery  
47-69 P.D. 1.7 ppm  
AT HS 1.6 ppm  
815 Collected 021-019-6.0-6.5  
2.5" x 6" VSA TPH  
brown sleeve metabasite  
625 Collected 9-11 Antennal  
13-23 30 36 100% Recovery  
P.D. 1.8 ppm  
ATHS  
830 Collected D21-019-10.5-10.5  
1.5" x 6" VSA TPH  
brown sleeve metabasite  
840 Collected 13-15"  
22 19 20 25 100% Recovery  
P.D. 1.6 ppm  
ATHS 1.6 ppm  
845 Collected 01-019 BH - 14.0-14.5  
2.5" x 6" VSA TPH  
brown sleeve metabasite  
Kathy Patchett

32

7/14/94

Started 021-018BH  
 Collected ~~0.5~~ - 2.5'  
 30 50 40 40  
 PID 1.5 ppm  
 ATHS 3-10 ppm

Collected 021-018BH-1.5-2.0  
 UVA  
 SVA  
 Metals  
 sleeve  
 2.5" x 6"

Collected 5-7' GC-BTEX  
 2 6 5 7 20 % Recovery  
 PID 1.3 ppm  
 ATHS 2.0 ppm

Collected 021-018BH-6.0-6.5  
 UVA  
 SVA  
 Metals  
 GC-BTEX

Do not collect due to poor recovery  
 collected 9-11'

7 12 30 19 60 % Recovery  
 PID 1.4 ppm  
 ATHS - did not collect

Collected 021-018BH-10.0-10.5  
 UVA  
 SVA  
 Metals  
 GC-BTEX

021-018BH-10.5-11.0  
 Kathryn Pritchett

7/14/94

33

0.5-2.75 Sand and Silt, little gravel, pebbles size mostly granular, moist - dry, loose, soft, dark yellowish brown  
 2.2-2.5 Silt, some sand, some gravel, cobble size, moist - dry, firm, dark yellowish brown

9-11 Silt, little - some gravel, cobble size, wet, firm, trace - little clay, dark yellowish brown  
 13-14 Silt and Sand, little - some gravel, cobble size, wet, soft, dark yellowish brown, trace clay, little sand

14-15 Silt, trace clay, some gravel, cobble size, wet, firm, dark yellowish brown

Kathryn Pritchett

3.1	7/14/94					35
1005	Collected 13-15'					
	13-20 21 85 % Recovery					
	PID 1.3 ppm					
	ATHS					
	Collected 021-018 BH-14.0-					
1010	VQA					
2.5" X 6"	SVOA					
	metals					
	GC-BTEX					
1015	Collected Duplicate					
	021-018 BH-14.5-15.0					
1030	Started 021-016 BH					
1035	Collected 0.5-2.5'					
	15 23 23 13 50 % Recovery					
	PID 1.2 ppm					
	ATHS 0.2 ppm					
1040	Collected 021-016 BH-1.5-					
2.5" X 6"	VQA					
	SVOA					
	metals					
	GC-BTEX					
1045	Collected 5-7'					
	75 5 10 80 % Recovery					
	PID 1.1 ppm					
	ATHS 1.5 ppm					
1050	Collected 021-016 BH-					
2.5" X 6"	VQA					
	SVOA					
	metals					
	GC-BTEX					

7/14/94 35

Silt, some sand,  
moist-dry, little gravel,  
pebble size loose dark  
Silt, fine - little brown  
sand, trace clay, little  
gravel; pebble size;  
firm, moist - dry;  
dark yellowish brown  
Silt; trace clay, gravel;  
trace sand, little gravel;  
pebble size, firm,  
moist - dry, decrease  
in sand downward;  
dark yellowish brown  
- medium yellowish - reddish  
- brown

Silt, trace clay;  
little to some gravel;  
cobble size firm  
wet, medium to thick  
yellowish brown  
Same as 9-11

Kathy Patrick

36

1120

7/14/94

Collected 9-11'

2116 22 23 70% Recovery

PID 18 ppm

ATHS 0.9 ppm

1125 Collected 021-016 BH - 10.5 - 13.5'

2.5" VOA

X6 SVOA

Bump sleeve

Collected 13-15'

PID 0.9 ppm

ATHS 0.9 ppm

Collected 021-016 BH - 14.5 - 14.5'

VOA

SVOA

metals

did not collect

Drillers granted 021-016 BH

to lunch

went to Hanger 103 to

pick up bottles for

equipment insert sample

K

Kathy Fitzhugh

Collected

1400 021-RB01

equipment insert

TPH 12 HLO

Post 12

1430 Started 021-015 BH

Collected 1-2 0.5-2.5'

16 20 11 70% Recovery

PID 0 ppm

ATHS 0 ppm

1445 Collected Sample 021-015 BH - 1.5 - 2.0'

2.5" VOA

X6 SVOA

Bump sleeve

Collected 5-7'

3 8 12 16 80% Recovery

PID 1.0 ppm

ATHS 0.1 ppm

Collected 021-015 BH - 6.0 - 6.5'

VOA

SVOA

metals

Collected 9-11'

50 62 76 59 75% Recovery

PID 0.9 ppm

ATHS 0 ppm

Kathy Fitzhugh

37

36

0.5-

2.5

no obs

5-7

no obs

9-11

no obs

13-14

7/14/94

Silt and Sand - some gravel, mostly granule size, pebble size, dark yellowish brown, moist-dry, loose

Silt, trace clay, firm, soft, wet, medium reddish - yellowish brown, trace

gravel (granule size) Silt, trace clay, sand gravel, cobble size, wet, very firm, medium reddish - yellowish brown

Same as 9-11

~~R~~

Kathy Patrick

7/14/94

39

1525 1580 Collected 021-015BH - UVA TPH 10.0-10.5 JVA Rest GC-BTEX Metals

Collected 13-15 P 14' 10 226 100 % Recovery

PTD 0.6 ppm Auger repair at 14' BGS

Collected 021-015BH - UVA TPH 13.5-14.0 JVA Rest GC-BTEX Metals

ATHS 0.5 ppm

Drillers grouting Soil boring 021-015BH

→ 97% Next cement 30% bentonite slurry mixed with potable water.

Bootholes 021-019BH already had been grouted.

Shipped (10) subsurface soil samples, (1) MSD, (1) Duplicate, (1) equipment rinse water, and (1) trip blank via Federal Express Air Bill # 0178014012

1800

Kathy Patrick

40

7/15/94

Weather: Sunny; 60's;

light wind

7-15 (Kathy R. Pitcock)  
OPIECH (Lichen Tons)

on site

Collected equipment

insecte

021-RB03

VOA 3- 1/2 and vial HCL

SVOA 1 L

Pest 1 L

TPH 1 L HCL

metals 1 L HNO3

840 Started 021-017 BH

842 Collected 0.5-2.5

6 22 209 50 % Recovery

PIID 0 ppm

ATHS 0 ppm

845 Collected 021-017 BH - 1.5-2.0

2.5" UOA Pest

X6" 5 UOA TPH

Brown metals GC - BTEX

Slave Collected 5-7'

850 18 22 37 80 % Recovery

PIID 0 ppm

ATHS 0 ppm Kathy Pitcock

7/15/94

41

Silt; trace clay;  
trace gravel; loose;  
moist-dry; dark;  
yellowish brown

0.5-  
2.5

Silt; little - some  
gravel; cobble size;  
firm; trace clay;  
moist-dry; stiff;  
medium reddish -  
yellowish brown

5-7

no  
odor

Silt; little to some  
sand; firm; wet;  
little gravel (granule  
size) medium reddish -  
yellowish brown

9-10

no  
odor

10-11  
Some as 5-7, wet

13-14  
Some as 10-11

14-15  
Sand and Granule

trace gravel; pebble size;  
wet; loose; soft; dark;  
yellowish - gray brown

no  
odor

Silt; trace clay; little  
gravel; granule size; firm;  
wet; medium reddish -  
yellowish brown

15-?

Kathy Pitcock



92

400

2.5" X 6" Brass Sleeve

905

910

7/15/94

Collected 021-017BH -

VOA Post GC-BTEX  
SVOA Post 6.0-6.5

Collected Duplicate  
021-017BH - 6.5-7.0

Collected 9-11' 95% Recovery

12 20 26 35  
PID 0 ppm  
ATHS 0.4 ppm

Collected 021-017BH - 10.0-10.5

VOA Post GC-BTEX  
SVOA Post 13-15

Collected 14 21 20 23  
PID 0.1 ppm  
ATHS 0.8 ppm

Collected 021-017BH - 14.0-14.5

VOA Post GC-BTEX  
SVOA Post 14.5

Collected 021-017BH - 14.0-14.5

VOA Post  
SVOA Post  
metals

Drillcore grouted  
021-017BH

Kathy Fittell

7/15/94

43

Started 021-026mw

Collected 0.5-2.5' 40% Recovery

Collected BTEX - GC

021-026mw - 2.0-2.5' PID 0 ppm

ATHS 4.0 ppm  
Collected 4-6'

4 11 76 10% Recovery

Collected 021-026mw - 5.0-5.5

GC-BTEX  
Do not collect due to poor recovery

Collected 7-9' 40% Recovery

12 34 40% Recovery  
Collected 021-026mw - 8.5-9.0

GC BTEX  
PID 0 ppm  
ATHS 0 ppm

Collected 10-12' 65% Recovery

3 6 9 12 65% Recovery  
Collected 021-026mw - 11.0-11.5

GC BTEX  
PID 0 ppm  
ATHS 0 ppm  
Kathy Fittell

4/4

0.5-  
2.5

no  
color

4/4 7-9

no  
color

10-12

7/15/94

Silt and sand;

some gravel; loose;  
dy dark yellowish-  
grey brown

Peat; some silt-  
medium - dark grey  
brown; wet

Silt; little gravel;  
pebble size; wet;  
soft; firm;  
medium reddish

to yellowish brown.

Silt - soft same as

10-12 - cobble

size.

15.5-

17.5

Kathy Patterson

7/15/94

45

Collected 15.5 - 17.5'

5/11/85 100% Recovery

Collected 021-026 MW -

16.5 - 17.0

PID 0 ppm

A.T.H.S 0 ppm

- Started constructing

021-~~mw~~ 026 MW

Hydrated <sup>bimontate</sup> pellets

PD

Finished constructing surface

completion of MW

- need to paint protective

casing either brown or

beige - informed Steve

Steele / Huntlyden.

Went back to Hager 103 to

- collect equipment invertebrate

021 - RB03 (refer to page

46 of the field logbook)

Shipped (3) subsurface

soil samples; (1) duplicate,

and (1) equipment invertebrate.

via Federal Express

Air Mail # 0178014034

Kathy Patterson

46

20

17  
3 stick up

1-10' riser  
1-10' screen

(2) 50 lbs buckets  
Bentonite Pellets  
WYB-Ben, B.C.  
Enviro Plug  
5/6 inch pellets

Sand: Red Flint  
Fisher Sand 4  
Gravels  
50 lbs/bag  
(12) bags

Sand  
Puck

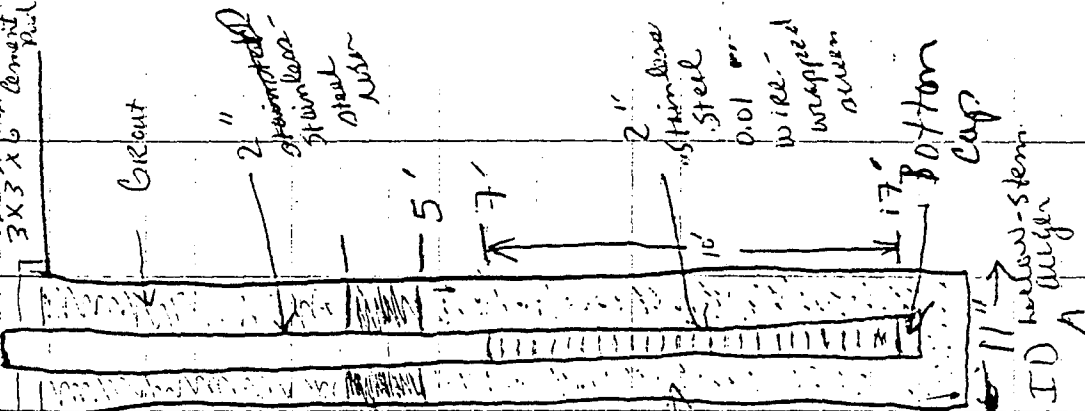
TD 17.40  
19.40

Used - 6.25 ID  
A

7/15/94

021-026 MW  
Construction

3 post  
Prestressed  
concrete  
3'x3'x6" concrete  
rod



Kathy Pitelett

Kathy Pitelett

47

7/15/94

John Marie (301) 441-3700

18 July 1994 - 20 July 1994

48

Monday

7/18/94

Weather: Sunny; mid 60's

700

OPTECH / Kathryn Patchell

Ruben Torres

Joe Byrd, Jr.  
at Hanger 103 to load

Food Explorer

Kathryn Patchell

at Site 21 to

meet Huntington

Ed E - Stew Stew &

Jim Sargeant

Kathryn Patchell

Ruben Torres

Joe Byrd

at Site 17 to setup

decontamination area.

Environment - 800-648-9355

Instrumentation

% Radisson Hotel

505 W. Superior St.

Duluth, MN 55802

(218) 727-8961

Houston 1-713-240-2277

Bobby Turner

Kathryn Patchell

930

Talked to

A Ray Anderson

Environmental Protnments

at Houston - ordered

a new filter

Called Kneeg S&P

Satterseid & P (SPL Inc.)

to check if samples

have been received

properly - no problems

→ only one water bottle

had broken during shipment

but they were able to

retrieve sample from

another bottle of the

set.

Called Norman

Livingard (KREM) →

left message that

we were finished with

the drilling at Site 21,

therefore, they can begin

surveying anytime. Also

left hotel number for

contacting me.

Kathryn Patchell

940

7/18/94 49

50  
 950  
 7/18/94  
 Called Beth Gaway  
 at (612) 297-8376  
 (MPLA) → left message  
 or phone number to  
 Radisson Hotel →  
 Will try her again today.  
 955  
 Huntington E & E  
 arrived at Hanger 103  
 to decontaminate drill  
 rig North of Hanger 103  
 Huntington E & E  
 Steve Stark  
 Jim Sargeant on Site 17  
 1045  
 Huntington  
 Jim Sargeant  
 Steve Stark  
 Jim Sargeant  
 Ruben Tones  
 Kathy Pickett  
 → attended Safety  
 meeting given by  
 Ruben Tones  
 Started 017-016BH  
 Collected 0.5-2.5'  
 2 20 26 26 75 % Recovery  
 PID 0 ppm  
 ATHS 0 ppm  
 Kathy Pickett

51  
 7/18/94  
 1055  
 Ruben Tones (OPTech)  
 went to Hanger 103  
 to search for and  
 brackets for split Apoor  
 Collected 017-016BH -  
 -1.5-2.5' 2.0  
 2.5"   
 6" Bypass  
 SVOA  
 TPH  
 Collected 4-6'  
 22 35 80 % Recovery  
 PID 0 ppm  
 ATHS 0 ppm  
 Collected 017-016BH -  
 5.0-5.5  
 2.5"   
 6" Bypass  
 SVOA  
 TPH  
 Collected 8-10'  
 2 4 9 15 75 % Recovery  
 PID 0 ppm  
 ATHS 0 ppm  
 Collected 017-016BH -  
 9.0-9.5  
 2.5"   
 6" Bypass  
 SVOA  
 TPH  
 Collected  
 Kathy Pickett

52

7/13/94

0.5 - 1.0  
minst-dry, pebbles, medium brown  
Silt, little clay, trace - little gravel, fine, roots, yellowish  
Silt, vent little sand  
Coarse; medium grey brown, moist clay  
Sand and silt; some granule, loose; medium - dense grey brown, moist-dry, coal fragments  
Best grey brown, moist, wood fragments; some silt, soft  
Sand and silt; little - 10 some granule, soft, firm, wet, medium, grey brown

Kathy Pinckel

53

7/14/94

1135 Started 017-015BH  
1140 Collected 0.5-2.5', 2.10 60 24% Recovery 71.5%  
PI 0 0 ppm  
ATHS 0 ppm  
1145 Collected 017-015BH - 7.5-2.5' 2.0-2.5' GC-BTEX  
2.5" x 6" SVA  
Brook Grove TPH  
1155 Collected 4-6', 3 3 3 5 45% Recovery  
PI 0 0 ppm  
ATHS 0 ppm  
1200 Collected 017-015BH 2.5" x 6" SVA 5.5-6.0 5.0-5.5 GC-BTEX  
Brook Grove TPH  
1210 Collected 8-10', 10 13 11 6 35% Recovery  
PI 0 0 ppm  
ATHS 0 ppm  
1215 Collected 017-015BH - 2.5" x 6" SVA 9.5-10.0 GC-BTEX  
Brook Grove TPH  
Kathy Pinckel

54

0.5-2.5

no sand

4-6

no sand

8-10

no sand

7/18/94

Silt and Sand; some gravel; cobble size; moist - clay; loose; some yellowish-grey; brown

Peat; moist; some firm; soft; dark grey; brown; some silt; little clay

Silt; some sand; wet; firm; soft; some gravel; cobble size; sand yellowish brown

7/18/94

55

Started 017-013BH

Collected 0.5-2.5

3 6 6 7 25% Recovery

PI.D

ppm

ATHS

ppm

Collected 017-013BH

SVOA

TPH

GC-BTEX

Did not collect due to poor recovery

Collected 5-10-6'

Thunderstorm - stopped

SVOA

Collected 017-013BH

SVOA

TPH

GC-BTEX

5.0-5.5

3 5 5 7

80% Recovery

PI.D

ppm

ATHS

ppm

Collected 5-10'

16 13 13 17

Collected 017-013BH

SVOA

TPH

-9.0-9.5

GC-BTEX

Kathryn Pittslett

Kathryn Pittslett

multiplication due to 100% recovery

56

7/18/94

4-6'

Peat; medium-dark  
gray brown; some silt,  
wood fragments; moist-dry;  
soft; firm

no

odor

8-10

Silt;  
sand; little to some  
little gravel;  
cobbles; wet; firm;  
soft; dark yellowish  
brown

no

odor

1420

collected 0.5-2.5'  
next to soil boring 017-013  
#11

25 87

90% Recovery

1430

collected 017-013B11-  
1.5-2.0

SUOA

TPH

GC-BTEX

0.5-

2.5

Silt; roots; little  
sand; little gravel;  
cobbles; moist-dry;  
dark yellowish brown

Kathryn P. Prescott

7/18/94

5-1

11420 1-800-337-0435  
Samples of Sample Bottles

TPH 4 1 L amber HCL

metals 2 1 L amber HNO<sub>3</sub>

pest 2 1 L

VOC 4/5-4/8 3-40 mL HCL

8 Trip Blank

SVOC 4 1 L amber

2

For groundwater samples Site 21

Need:

TPH 5

SUOC 5

VOC 5

pest 5

metals 5

QA/QC

1 L amber a clean HCL

1 L amber

(3) 40-mL

1 L clean

1 L Poly HNO<sub>3</sub>

(1) Field blank (2) equipment  
rinsewater & (1) duplicate

TPH

SUOC

VOC

pest

metals

4

4

4

4

4

1 L amber a clean HCL

1 L amber

(3) 40 mL

1 L clean

1 L Poly HNO<sub>3</sub>

Kathryn Prescott



58

7/15/94

Site 17

QA/QC

2 VOC

TPH

1 L amber

1 L amber or clear HCL

Site 18

QA/QC

VOC

metals

(5) 40-ml vials

1 L Poly HNO<sub>3</sub>

Order from Lake.

1 L clear HCL

1 L Poly HNO<sub>3</sub>

1 L clear

1 L amber

1600 Called Kaper Dattarseild

(SPL Lab) ordered the

required bottles listed

above and (6) coolers

by Wednesday

at Federal Express

office at Dulute airport.

Called Hazco

Need P.O.

Contract # 439722

Ordered OVM 5808

PID and water guard

1260 (wk @ 85/dm)

#150 cleaning fee if keep for &gt; 4 days

Kathryn Pivett

59

7/18/94

Collected ~~left~~

equipment inactivate

→ 017-RB01

SVOA

TPH

1 L amber

1 L clear HCL

PID had stopped

working properly due to

getting well in a sudden

thunderstorm at

approximately 1400.

PID is drying out and

is running to drive

out the moisture trapped

in PID. Ordered

PID from Hazco

for tomorrow delivery

to assure we have

a PID that operates

properly.

Shipped (8) subsurface

soil samples, (4) MS/MSO,

and (4) equipment inactivate

for Site 17 via Federal

Express overnight delivery.

in bill #

Kathryn Pivett

1615

1650

1730

600 Tuesday 7/19/94

weather: showers, mid 60's/  
thunderstorms predicted

700 Joe Byrd, Jr.

OPTECH Ruben Torres

Kathryn Pitchford

at Hanger 103 to load

Ford Explorer

Called Beth Grunberg Casway-

(MPCA) - left message

- she had called last

night at the hotel

and left message to

call her at 700 this

morning.

735 Ruben Torres

OPTECH Kathryn Pitchford

at Site 17

Huntingdon Stone Creek

Jim Sargent

also on Site 17

750 Safety meeting -

- all attended

810 Started 017-014BH

~~17~~

Kathryn Pitchford

7/19/94 601

812 Collected 015-2.5'  
37 37 37 65% Recovery  
PID 0 ppm

ATHS 0 ppm

Collected 017-014BH -

-1.5-2.0

GC-BTEX

4-6'

Collected 820 3 4 6 85% Recovery

PID 0 ppm

ATHS 0 ppm

Collected 017-014BH -

5.0-5.5

GC-BTEX

Collected Duplicate

017-014BH - 5.5-6.0

Collected 835 8-10'

5 5 13 60% Recovery

PID 0 ppm

ATHS 0 ppm

Collected 017-014BH

- 9.0-9.5

GC-BTEX

~~17~~

Kathryn Pitchford

62

0.5-  
2.5Silt

clay, trace - little  
cobble, little gravel,  
loose, size mixed-dry,  
dark yellowish

4-6

Peat

- gray brown  
silt, little - some  
moist, trace clay,  
medium to dark, soft,

8-10'

Silt

gray brown  
trace clay,  
some gravel, cobble  
size, little to some  
sand, wet, firm,  
dark, yellowish brown

7/19/94

trace - little  
little gravel,  
size mixed-dry,  
dark yellowish

- gray brown  
silt, little - some  
moist, trace clay,  
medium to dark, soft,

gray brown  
trace clay,  
some gravel, cobble  
size, little to some  
sand, wet, firm,  
dark, yellowish brown

Kathy Patchett

63

7/19/94

Started 017-012 BH-

Collected 0.5-2.5

Σ 24 14 g 40% Recovery

Collected 017-012 BH-

- 210-2.5

GC-BTEX

PII 0 ppm

ATHS 0 ppm

Collected 4-6'

Σ 7 11 12 70 % Recovery

PII 0 ppm

ATHS 0 ppm

Collected 017-012 BH

- 5.0-5.5

GC-BTEX

Collected 8-10'

Σ 24 25 55 35 % Recovery 70%

PII 0 ppm

ATHS 0 ppm

Collected 017-012 BH-

9.0-4.5

GC-BTEX

K

Kathy Patchett

64

7/19/94

Silt; trace clay;  
little sand; little  
gravel; pebble size;  
moist - dry; loose;  
roots.

4-5

Silt and Peat

medium grey-olive  
brown; moist-wet;  
soft; firm; wood fragments,  
batter - some clay  
(olive color)

5-6

Silt and Sand; little

gravel; pebble size;  
trace clay; wet;  
firm; soft; dark  
yellowish-grey brown

8-10'

Sand and Gravel

some silt; little gravel;  
pebble size; trace clay;  
loose; wet; dark

medium

yellowish brown

10'-?

Silt; trace clay;

trace - little gravel;  
gravel size; firm;  
wet - moist; dark  
yellowish brown.

medium

Katharine Pittsford

7/19/94

65

Started 017-011BH  
Collected 0.5-2.5  
3 GPY 4  
PIID 0 ppm  
ATHS 0 ppm

1010

1015

Collected 0.5-2.5  
% Recovery  
PIID 0 ppm  
ATHS 0 ppm

Collected 017-011BH -  
1.5-2.0

SVDA  
TPH  
GC-BTEX

1020

Collected 4-6'  
1336  
GC-BTEX  
% Recovery

PIID 0 ppm

ATHS 0 ppm

Collected 017-011BH  
-5.0-5.5

1025

2.5" X

6" Bore

SVDA  
TPH  
GC-BTEX

1035

Collected 8-10'  
2644  
75% Recovery

PIID 0 ppm

ATHS 0 ppm

Collected 017-011BH - 9.5-9.5

1040

2.5" X

6" Bore

SVDA  
TPH  
GC-BTEX

1050

Handing in EVE decontaminating  
by steam clean  
with liquid and potable  
water. Katharine Pittsford

۷۷

0.56

$$1.5 = 2.5$$

21-6

8-10

7191617E.

Silt ;  
- trace -  
little  
eye.  
soft  
brown

silt and Prat	medium
grey brown; salt-marsh; three bottles	

Silt and Peat; little clay; trace gravel; moist-wet; soft; p. syz; medium gray- blue brown
--

Silt ; some med-  
little gravel, cobble  
size ; little clay ;  
wet ; soft ; dense  
yellowish brown

Leahy Patrick

E9 A5/61/E

67

1130-  
1230  
1235

lunch  
 Check with Bruce Berg  
 Base CE about utility  
 clearance.

1245  
Bruce Berg at Site 17  
cleaned 017-010BH  
+ 017-017BH

1320 Started 017-010 BH  
1325 Collected 0.5-2.5'  
2410 40% Recovery

1330	PID 0.3 ppm	RF
2.5" x 6"	ATHs	RF
Brass	Collected 0.17 ppm	010B4
stave	SVDA	-
	TPH	GC-BTEX

1335  
2  
5 6 100 70  
Collected 4-6  
Raney  
PI 0 0 ppm

1340

1345

Collected 017-0109H -  
Duplicate. 5.5-6.0  
Koch Pisselott

68  
1345  
7/19/94

7/19/94

Collected 8-10  
43 23 29 25 75 Recovery  
PID 0 ppm  
ATHS 0.3 ppm  
Collected 0.7-0.10 BH-  
SUA 1.0-9.5  
TPH GC-BTEX

1350  
7/19/94

1400

Collected 0.5-2.5  
next to borehole  
0 % Recovery

PID  
ATHS

1405

Collected 0.7-0.10 BH-  
SUA  
TPH GC-BTEX

— Did not collect  
due to perc recovery  
— try to drive perc 0.2  
before hitting refusal  
→ tried 2 different  
locations near 0.7-0.10 BH

Kathy Pritchett

7/19/94

69

Silt and Peat

medium gray brown  
to dark yellowish  
brown; moist-wet;  
fine, soft; little  
clay; trace gravel;  
gravel size

4-5

Silt; trace-little  
clay; fine, soft;  
little - some gravel; cobble  
size; dark yellowish  
brown; wet

5-6

Silt; trace-little  
sand; little - some  
gravel; cobble size;  
wet; fine; dark  
yellowish brown;  
trace clay

Kathy Pritchett

70

1415

1420

7/19/94

Started 017-017BH

Collected 0.5-2.5

6 14 14 10 75 % Recovery

PIID 0 ppm

ATHS 0.60 ppm

Collected 017-017BH

SVOA - 2.0-2.5

TPH GC-BTEX

Collected 4-6

24 2 6 100 % Recovery

PIID 0 ppm

ATHS 1.0 ppm

Collected 017-017BH

SVOA - 5.0-5.5

TPH GC-BTEX

Collected 8-10

1 2 2 100 % Recovery

PIID 0 ppm

ATHS 0.6 ppm

Collected 017-017BH

SVOA - 9.0-9.5

TPH GC-BTEX

RP

Kathy Patchett

7/19/94

71

Silt: trace clay;

firm; moist-dry;

little gravel; cobble

size; dark yellowish

brown

Silt: little some

pebbles; little

coal fragments?

+ trace of trace clay;

moist-dry; firm;

dark yellowish;

brown; dark grey

brown fragments

Peat

dark grey brown; moist;

wood fragments; little

silt; trace clay;

firm; soft

Peat and Silt; trace

clay; light - dark

grey - olive brown; soft;

firm; wet; trace gravel;

pebble size

RP

Kathy Patchett

72  
1500

7/19/94

Released drillers  
from Site 17, Plan  
to meet Steve Skel  
at 700 at site 21  
to develop 021-026  
from Saugpothd  
will meet us at  
Site 17 at ~ 830

-900 to complete  
drilling soil borings.  
Soil borings, 017-018BH,  
017-020BH, and 017-019BH  
should be cleared by  
tomorrow morning. An  
Bruce Berg (Base CE)

Collected equipment  
rinse water from stainless  
steel split spoon  
017-RB02

1615

SVOC

TPH

Shipped (11) subsurface  
soil samples (2) duplicate  
subsurface soil samples, (1)  
MS/MSD; and (1) equipment  
representative via Federal Express,  
with 10:00 AM pickup

1715

Wednesday  
700

Weather: Sunny; mid 60's  
Kathryn Peitelott

OPTECH

Joe Byrd, Jr.  
Ruben Torres

at Site 21 to

develop 021-026 MW.

715

Calibrated Hydac

pH/conductivity/Temperature  
meter; Cambridge Model  
910, Serial # 9402

Beta Technology, Inc.  
pH 7.44

Reagent Buffer  
Ondion

1000 mS/cm

YSI 3167

Lot 94E82701

PI 0

0 ppm

WL: 7.92' TOC

T.D. 20.23' TOC

Volume =  $(0.0408) (2')^2 (12.3)$

Vwell = 2 gallons

~~KP~~

Kathryn Peitelott

7/20/94 73



Start	Temp.	pH	Cond.	Clarity
7/20/94	021-026 miles			
807	64.3	5.66	596	cloudy
812	62.8	5.94	640	cloudy
819	63.4	6.14	696	cloudy
823	65.4	6.32	764	cloudy
830	65.8	6.45	636	cloudy
835	65.2	6.69	570	cloudy
840	62.9	6.78	486	cloudy
843	55.7	6.38	635	cloudy
846	54.1	6.86	587	cloudy
855	55.2	7.01	714	cloudy
904	55.4	7.14	712	cloudy
907	55.4	7.13	870	cloudy
912	55.1	7.11	862	slightly cloudy
912	55.1	7.14	863	slightly cloudy
Photo	Stopped balling - built dry			
925	W.L.	17.39'	TDC	
1005	Arrived at Site 17			
	for Byrd Jr.			
	Ruben Torres			
	Kathryn Perdomo			
	Steve Steer			
	Jim Sangerstad			
	attended safety meeting			
1055	no clearance or the remaining soil bairings - Bruce Berg called US West Phone Co.			
1058	Kathryn Perdomo			

Time	Notes
1110	Started 017-018 BH
1115	Collected 0.5-2.5
	612 32 LL 70 % Recovery
	PID 0 ppm
	ATHS 1.0 ppm
1120	Collected 017-018 BH
	<SVDA -1.5-2.0
	<TPH GC-BTEX
1125	Collected 4-6'
	23 57 90 % Recovery
	PID 0 ppm
	ATHS 0.9 ppm
1130	Collected 017-018 BH
	<SVDA 5.0-5.5
	<TPH GC-BTEX
1135	Collected duplicate
	017-018 BH - 5.5-6.0
1140	Collected 8-10'
	23 610 75 % Recovery
	PID 0 ppm
	ATHS 0.8 ppm
1145	Collected 017-018 BH
	<SVDA 9.0-9.5
	<TPH GC-BTEX
	Kathy Perdomo

76

0.5-  
1.0

7/20/94

Silt; roots;  
sand; date  
loose; date  
brown

1.0-  
2.5

Silt  
clay; fine  
clay; trace  
little & some

sand; some gravel;  
cobble size; wet;

dark yellowish brown

Rest; fine-silt; soft;  
moist; wet; wood

fragments; medium

- dark; grey brown;

trace-little clay

Silt and Rest - little

8-9

clay; medium grey-  
olive brown; moist;  
trace granule; soft;

9-10

Silt; trace clay;  
trace little sand;

little - some gravel;

pebble size; wet;  
fine; dark yellowish  
brown

Kathy Pittsott

7/20/94

77

Started 017-019BH  
Collected 1.0-3.0

2 recovery

Collected 017-019BH

SVDA

TPH

GC-BTEK

Soil Borings 017-

019BH with 017-020BH

have not been clean;

Break for lunch

US West at site near 17

to check/clear locate

main phone line from

Herrmann to Grand

Lapida

to lunch

Kathryn Pittsott

017EHC Rubin Torres

Huntingdon Steve Stark

pin Sengstack

on Site 17 to continue

drilling

Started 017-019BH

Kathy Pittsott

76

1330

7/20/94

Collected 0.5-2.5'  
3 3 5 8 50 % Recovery  
PI0 25.1 ppm  
ATHS 0 ppm

1333

Collected 0.17-0.19 BH -  
SVOA 1.0-2.5'  
TPH GC-BTEX

1335

Collected 4'-6'  
2 3 7 10 % Recovery  
PI1) 0 ppm  
ATHS 0 ppm

1340

Collected 0.17-0.19 BH -  
SVOA 5.0-5.5'  
TPH GC-BTEX

1350

Collected 8-10'  
8 11 12 17 % Recovery  
PI0 0 ppm  
ATHS 0 ppm

1355

Collected 0.17-0.19 BH  
SVOA -9.0-9.5  
TPH GC-BTEX

- diesel fuel apparent  
in drill jetting

Kathy Pittcock

7/20/94

79

Silt, roots, moist-dry/  
trace clay; loose;  
trace sand; trace  
gravel; pebble size;  
medium-dark yellowish-brown

1.0-

Silt; some sand.

2.5

little gravel; pebble  
size; soft, wet, little  
granule; trace clay;  
dark yellowish-grey  
brown

slight  
odor

4-5

Silt; little-sand  
sand; little gravel;  
pebble size - little  
granule; wet, soft;  
dark yellowish-grey  
brown; trace clay

slight  
odor

5-6

Silt; firm, wet;  
trace clay; little  
gravel; pebble size;  
dark yellowish-brown

no  
odor

5-10

Silt; trace clay; little  
gravel; pebble size; firm-  
wet; dark yellowish-brown  
Kathy Pittcock

7/20/94

7/20/94 81

80

1448 Started 017-020BH  
1425 Collected 0.5-2.5'  
1427 3759 75% Recovery  
-Entire PID 0 ppm  
ATHS 0 ppm

1430 Collected 017-020BH-  
SUA 1.5-2.0  
TPH GC-BTEX

1445 Collected 4-6'  
3222 75% Recovery  
PID 0 ppm  
ATHS 0 ppm

1450 Collected 017-020BH-  
SUA 5.0-5.5  
TPH GC-BTEX

1500 Collected 8-10'  
512 1927 70% Recovery  
PID 0 ppm  
ATHS 0 ppm  
1505 Collected 017-020BH  
-SUA 9.0-9.5  
TPH GC-BTEX

Kathy Pritchett

0.5-1.0 Silt; roots; trace clay; little sand; little gravel; pebble size; loose; moist-dry; dark yellowish brown

1.0-2.5 Sand and gravel; some silt; loose moist-wet; tabular gravel; pebble size; dark yellowish-grey brown

4-6 Peat; some silt; medium-dark; grey brown; firm; true-little clay; soft; wet;

8-10 Silt; trace clay; little gravel; cobble size; wet; firm; trace sand; dark yellowish brown

Kathy Pritchett

82

1515

Drillers

decontaminating  
augers and drill rig by  
the following procedure:

- steam clean with  
Liquidinox and potable  
water
- rinse with potable  
water

The above procedure have  
been used throughout  
the drilling program at  
sites 17 and 21.

The following procedure

have been used for decontaminating  
the stainless-steel split  
spoons:

- wash & scrub with  
by alcohol and  
potable water;
- rinse with potable  
water;
- rinse with deionized  
water;
- rinse with methanol;
- air dry & wrap with  
aluminum foil (shiny side)

Kathryn Pittelott

7/20/94

Drillers

- steam clean with  
Liquidinox and potable  
water
- rinse with potable  
water

The above procedure have  
been used throughout  
the drilling program at  
sites 17 and 21.

The following procedure

have been used for decontaminating  
the stainless-steel split  
spoons:

- wash & scrub with  
by alcohol and  
potable water;
- rinse with potable  
water;
- rinse with deionized  
water;
- rinse with methanol;
- air dry & wrap with  
aluminum foil (shiny side)

Kathryn Pittelott

7/10/94

83

- The above procedure  
have been used  
throughout the drilling  
& sampling program for  
sites 17 and 21.

Collected equipment  
insectate

- Joe Byrd Jr. (OPTECH)  
observing drillers move  
11 drums to staged area

on pad at Site 17

Shipped (9) subsurface  
soil sample, (4) duplicate  
and (1) equipment insectate  
via Federal Express.  
Air Bill #

Kathryn Pittelott

81

Thursday 7/21/94

Weather: cloudy, mid 60's; showers predicted.

730

Joe Byrd, Jr.

OPTech / Ruben Torres

Kathryn Pittelott

at Hangar 103 to

load Ford Explorer

for collecting subsurface

soil samples at Site 15.

800

met Site ~~Engel~~ Grange

(DAMO) to unlock gate

at Site 18.

830

OPTech / Ruben Torres

Kathryn Pittelott

at Site 18

715

Called Beth Galloway

(MPCA) to update her

about project. Told her

that we probably collecting

ground-water samples from

Site 21 on Friday (7/22/94).

She said Richard Kofner

(MPCA) will contact me.

- he is on birth or vacation

- he probably will observe

an work. P. Pittelott

7/21/94

85

Decontaminating 2"x5"

brass sleeve, plastic

caps, and hand auger

(stainless steel) by the

following procedure:

• scrub with alcohol

and potable water;

• rinse with potable

water;

• rinse with deionized

water;

• rinse with methanol;

• air dry and wrap with

aluminum foil (shiny

side out).

915 Raining - rain

showers only

945 Raining too hard to

continue with collection

of subsurface soil samples

1005 - left Site 18

1030 - headed back to hotel to

change clothes and wait for

weather to clear up.

Kathryn Pittelott

86

7/21/94

1315

Arrived at Huntington

EdE to pick up

designated water (3 gallons).

\$35.00

per

Huntington finished moving

Squalls

barrels at Site 21

to designated area behind

Bldg. 240. Joe Byrd, Jr.  
observed this task.

1350

Ruben Torres and

Kathryn Pittslett

arrived a Hager 103

to pick up supplies.

Light shower exist on

the hill.

Called ~~Steve~~ Steve

Stark (Huntingdon) to

order additional 55-gallon

drum for 021-026ms

to be delivered tomorrow.

Called John Morris (OPTech)

to update about project.

Called Viking Industrial

North (619-4851) to order

nitrile gloves 4730 4748

Grant Avenue from

40th Avenue &amp; Kit - South I-35

TL Blvd - 7 block on

out 111 211.71

87

7/21/94

Left Hager 103

Went to Viking

Industrial North to

Purchase (5) boxes of

Nitrile gloves (100 each)

and one

pair of safety

glasses for Joe Byrd, Jr.

Went to The Paper Store

to photocopy field notes.

It has been very difficult

finding an available

copy machine. Only

photocopy (55) pages of

Joe Byrd, Jr. field notes

before problems occurred

with the only available

copy machine.

Went to Minnesota

Surplus to purchase

mosquito net. - surrounded

Back at Hotel. ~~located~~

the desk manager to allow

me to use their copy machine.

After several attempts -

constant paper jams made it

impossible to complete the

task.

Kathryn Pittslett

86

7/22/94

Weather: Cloudy: 60's  
 +15 Joe Byrd, J.D. / Ruben  
 Kathryn Pittsott at Site 2/1  
 800 021-009mw

PID 0 ppm

TX W.L. 10.84'  $h = 9.08$   
 T.D. 19.92  
 $V = (0.163) (9.08') = 1.5 \text{ gals.}$

885  $VX3 = 4.5$  gallons  
 Started bailing with  
 a PVC 2" bailer  
 (decontaminated by  
 method stated on p. 85  
 of this field logbook.)

815 Calibrated pH, Temp,  
 Cond. meter  
 pH 7 & 10

1000  $\mu S/cm$ 

gals	Temp	pH	Cond.	Clarity
820 14.5	55.8	6.60	1481	cloudy
525 6.5	54.2	6.58	1496	cloudy
827 7.0	54.2	6.53	1481	cloudy

Stopped pumping  
 plugged dry  
 P.M.H. Pittsott

7/22/94 89

930  
847

collected 021-009mw -  
 WA HCL GWOL,  
 1-45 500ml metels HNO<sub>3</sub> used Teflon  
 Photo W.L. 12.88' TDC bailer

Temp. pH cond. clarity  
 57.6 5.83 1330 cloudy

- collected 1 L clear  
 for metals to allow  
 silt to settle out then  
 decant into 500ml

poly bottle preserved  
 with HNO<sub>3</sub>

Photo of collected sample

1000 021-010mw PID = 0 ppm

W.L. = 6.86' TDC  $h = 10.76$   
 T.D. = 17.56' TDC

$V = (0.163) (10.76') = 1.7$  gallons

$VX3 = 5.2$  gallons

1005 Collected equipment  
 insecte - bailer (2" Teflon)  
 021-RB04

3-45 ml WA HCL  
 1-500ml metels HNO<sub>3</sub>

~~P.M.H. Pittsott~~



90

7/22/94

1005 Started bailing using PVC  
2" bailer

Gals	Temp	pH	Cond.	Clarity
5	60.2	5.89	734	cloudy
6.5	59.4	6.18	721	cloudy
8.0	56.7	6.35	681	cloudy
7.5	55.1	6.43	670	cloudy
8.5	55.1	6.71	683	cloudy

Stopped bailing  
dry

1055

Collected 021-010mw-  
3-40ml VOA HCL GWO1  
1-500ml metals HNO3

- Collected 1 L clean ~~for~~ for  
metals to allow silt to settle  
out then decant into 500 ml  
poly bottle ~~preserved~~ preserved  
with HNO3.

- Collected duplicate  
021-010Amw-GWO1  
W.L. 12.70' TOC  
Temp. pH Cond. Clarity  
61.4 6.76 783 slightly cloudy

Kath Patchett

1125

7/22/94 91

021-026mw  
PID 0 ppm  
W.L. 8.21' TOC  
TRD = 20.22' TOC  
(0.163) (12.01) = 2.0 gallons  
3 = 6 gallons  
Started bailing with 2" PVC bailer

Gals	Temp	pH	Cond.	Clarity
6	62.4	7.31	703	cloudy
8	62.4	7.31	751	cloudy
10	62.5	7.03	861	cloudy
12	61.1	6.99	905	cloudy
14	61.2	7.00	967	cloudy
16	62.5	6.99	1103	cloudy
18	61.9	6.82	1127	cloudy
20	61.5	6.79	1130	cloudy
22	61.5	6.72	1193	cloudy
24	60.9	6.72	1271	cloudy
26	60.4	6.73	1254	cloudy
28	59.8	6.98	908	cloudy
30	58.1	7.11	835	cloudy
32	57.4	7.33	667	cloudy
34	55.7	7.70	624	cloudy

Kath Patchett

92

7/22/94

Gals	Temp.	pH	Cond.	Clarity
1301	36	7.81	684	cloudy
1307	38	7.85	722	cloudy
1310	40	7.60	777	cloudy

Stopped pumping →  
 Pumped dry,  
 to lunch.

1320  
1430

Got Key to site 18 pte  
 from Sue Gage (DRMO).  
 Air Products  
 373 ~~Centerburg Rd.~~

Centerburg Rd.

Shakopee, MN

(612) 445-4610 55379

Minneapolis, MN

1440  
 1440 OPTech / Joe Byrd, Jr.  
 Kellen Tower

Kathryn Pitts

arrived at Site 21

1445 Collected 021-026 mw-

3-40 ml VOA HCl GWS  
 1-500 ml metals HNO<sub>3</sub> used 2"

-1 l clean was collected for  
 metals for allow silt to  
 settle out then decant into  
 500-ml poly bottle prepared

Kath. Pitts

7/22/94 93

W.L. 8.55' TOC  
 Temp pH Cond. Clarity  
 63.2 7.02 967 slightly  
 cloudy

1535 021-014mw

PID.

0 ppm

W.L. 4.85' TOC h = 13.0'

T.D. 14.88 TOC

V = (0.163) (10.01') = 1.6 gallon

VX3 = 4.9 gallons

Started bailing with 2"  
 PVC bailer

Gals	Temp.	pH	Cond.	Clarity
154050	63.6	6.68	1654	cloudy
154053	59.6	6.83	1673	cloudy
154056	59.3	7.06	1731	cloudy
154100	59.2	7.31	1721	cloudy
1604	59.0	7.29	1711	cloudy
1607	59.3	7.35	1711	cloudy

1611 19 Stopped pumping

Collected 021-014mw

3-40 ml VOA HCl - GW

1-500 Poly metals HNO<sub>3</sub>

- Collected 1 l for metals  
 to allow silt to settle  
 part then decant into 500-ml  
 poly bottle decanted with HNO<sub>3</sub>.

Kath. Pitts

44

1530

7/22/94

Collected one field blank

for Site 21

021 - FBO1

3-40 mL VOA HCL

1 L amber SVOA

1 L amber TPH HCL

1 L Rest

1-500 mL Poly metab HNO<sub>3</sub>

Shipped (4) ground-water samples, (1) duplicate,

(1) field blank for Site 21,

(1) equipment rinsewater,

and (1) trip blank.

(745)

Kathy Pittlett

7/20/94

95

Weather: partly cloudy;  
mid-high 70s, chance of  
showers.

700 Joe Byrd, Jr.

Ruben Torres

OPTECH Kathy Pittlett

at Hager 103 to

load up supplies

Arrived at Site 17

to collect 1.5-2.5

interval at 017-010BH.

725

OPTECH Joe Byrd, Jr.

Ruben Torres

Kathy Pittlett

805 Collected 017-010BH -

2"x5" SVOC 1.5-2.5

Brass TPH GC-BTEX

severe

silt; some sand; dark yellowish-brown; moist - dry

810 Off Site 17

530

OPTECH Joe Byrd, Jr.

Ruben Torres

Kathy Pittlett

at Site 18

Kathy Pittlett

9/6 7/23/94

245 Started hand auging  
018-007 BH  
Collected 10"-20"

PID = 190 ppm  
ATHS: 57.3 ppm  
100% Recovery

85T Collected 018-007 BH  
2"x5" - VOA - 1.3-1.7  
GC-BTEX to bottle  
Silt; + trace clay;  
note: trace gravel;  
granule; trace sand;  
soft; moist  
odor

905 Collected 018-007 BH  
2"x5" - VOA - 1.7-2.1  
GC-BTEX 1.7-2.1  
PID 90 ppm  
ATHS 57.0 ppt  
100% Recovery

910 Collected duplicate  
018-007 BH- 2.1-2.5  
Started 018-006 BH

415 Collected 0.8-1.7  
930 PID 0 ppm  
100% Recovery ATHS 0 ppm

7/23/94 97

935 Collected 018-006 BH -  
2"x5" - VOA 1.3-1.7  
GC-BTEX

940 Collected 1.7-2.5  
100% Recovery  
PID: 0 ppm  
ATHS: 0 ppm

945 Collected 018-006 BH -  
2"x5" - VOA - 1.7-2.1  
GC-BTEX MS(MSD)  
Sieve 947 Collected 018-006 BH -  
2"x5" - VOA 2.1-2.5  
GC-BTEX

955 off Site / 8  
1015 8 Athyn Pritchett  
DTECH Reuben Torres  
at Site 21 to  
collect sediment

1125 Collected 021-006 SD  
2"x5" - VOC test  
GC-BTEX  
Sieve 947 Collected 018-006 BH -  
2"x5" - VOA 2.1-2.5  
GC-BTEX

PID 0 ppm  
ATHS 0 ppm  
VOC 0 ppm  
Sieve 947 Collected 018-006 BH -  
2"x5" - VOA 2.1-2.5  
GC-BTEX

98

7/23/94

- Augered down 12" using  
a stainless-steel  
hard auger with 2"x5" brood  
sleeve

1205

2"x5"

Brood

Sleeve

#1210

Collected

VOA

SVOA

TPH

Collected

Duplicate

021-0055D

PID: 0 ppm

Collected 021-0075D

VOA

SVOA

TPH

PID

ATHS

Collected

VOA

SVOA

TPH

PID

ATHS

0 ppm

0 ppm

GC-BTEX

0 ppm

0 ppm

GC-BTEX

0 ppm

0 ppm

GC-BTEX

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7/24/94

Checklist for Duluth  
RFI Sites 17, 18, ad  
field activities.

Site 17 GC  
Soil Borings Sample (5)  
017-010 BH 3 ✓ SS, 2 ✓ 3  
017-011 BH 3 ✓ SS, 2 ✓  
017-012 BH 3 ✓ SS, 2 ✓  
017-013 BH 3 ✓ SS, 2 ✓  
017-014 BH 3 ✓ SS, 3 ✓  
017-015 BH 3 ✓ SS, 3 ✓  
017-016 BH 3 ✓ SS, 3 ✓  
017-017 BH 3 ✓ SS, 2 ✓  
017-018 BH 3 ✓ SS, 3 ✓  
017-019 BH 3 ✓ SS, 2 ✓ 3  
017-020 BH 3 ✓ SS, 3 ✓

QA/QC  
Equipment Rinsewater 3 ✓  
Duplicate 3 ✓  
MS/MSD 2 ✓  
Field Blank 2 ✓

Water-level data 1P  
Investigator derived waste log  
check drums & wrap caution  
type around them  
Pictures of Site 17 & Survey  
data 1P

7/24/94

101

Site 18  
Soil Borings Sample (2)  
018-006 BH 2 ✓ SS, 2 ✓  
018-007 BH 2 ✓ SS, 2 ✓  
QA/QC  
Equipment Rinsewater 1 ✓  
Duplicate 1 ✓  
MS/MSD 1 ✓  
Trip Blank 1 ✓  
Field Blank 1 ✓  
Water-level data  
Pictures & Survey

Site 21 GC  
Sediment Screen Sample (5)  
021-004 SD 1 ✓  
021-005 SD 1 ✓  
021-006 SD 1 ✓  
021-007 SD 1 ✓

QA/QC  
Equipment Rinsewater 1 ✓  
Duplicate 1 ✓  
MS/MSD 1 ✓  
Trip Blank 1 ✓

Kathy Pittsott

102

7/24/94

Ground-water Samples GC Screen

✓ 021-026 MW 2 ✓  
 ✓ 021-009 MW 1 ✓  
 ✓ 021-010 MW 1 ✓  
 ✓ 021-014 MW 1 ✓

✓ QA/QC Equipment Rinsewater 1

✓ Duplicate 1 ✓

✓ Trip Blank 1 ✓

✓ Field Blank 1 ✓

Water-level data redo

✓ Move drums

✓ 2nd water sample from 021-026 MW ID on map

✓ Get drillers to complete

surface construction - point

✓ quad post + ID

✓ check if well permit

has been finalized

pictures &amp; survey



Kathy Patterson

7/24/94

Ground-water Samples GC Screen

✓ 021-026 MW 2 ✓  
 ✓ 021-009 MW 1 ✓  
 ✓ 021-010 MW 1 ✓  
 ✓ 021-014 MW 1 ✓

✓ QA/QC Equipment Rinsewater 1

✓ Duplicate 1 ✓

✓ Trip Blank 1 ✓

✓ Field Blank 1 ✓

Water-level data redo

✓ Move drums

✓ 2nd water sample from 021-026 MW ID on map

✓ Get drillers to complete

surface construction - point

✓ quad post + ID

✓ check if well permit

has been finalized

pictures &amp; survey



Kathy Patterson

7/24/94

Soil Borings GC Screen

✓ 021-015 BH 4 ✓  
 ✓ 021-016 BH 4 ✓  
 ✓ 021-017 BH 4 ✓  
 ✓ 021-018 BH 4 ✓  
 ✓ 021-019 BH 4 ✓  
 ✓ 021-020 BH 4 ✓  
 ✓ 021-021 BH 4 ✓  
 ✓ 021-022 BH 4 ✓  
 ✓ 021-023 BH 4 ✓  
 ✓ 021-024 BH 4 ✓  
 ✓ 021-025 BH 4 ✓  
 ✓ 021-026 MW 4 ✓

✓ QA/QC

✓ Equipment Rinsewater 3 ✓

✓ Duplicate 3 ✓

✓ ms/msd 2 ✓

✓ Trip Blank 4 ✓

✓ Field Blank already collected

✓ check drums &amp; picture

✓ survey

✓ need to call ANG



Kathy Patterson

103

Sample (a)

✓ 55, 2 ✓  
 ✓ 55, 2 ✓  
 ✓ 55, 3 ✓  
 ✓ 55, 2 ✓  
 ✓ 55, 3 ✓  
 ✓ 55, 3 ✓  
 ✓ 55, 3 ✓  
 ✓ 55, 3 ✓  
 ✓ 55, 3 ✓  
 ✓ 55, 2 ✓  
 ✓ 55, 2 ✓

✓ QA/QC

✓ Equipment Rinsewater 3 ✓

✓ Duplicate 3 ✓

✓ ms/msd 2 ✓

✓ Trip Blank 4 ✓

✓ Field Blank already collected

✓ check drums &amp; picture

✓ survey

✓ need to call ANG



Kathy Patterson

104

Monday 7/25/94

Weather: Sunny, High 50°  
Low 60°.745 ABF Freight Systems,  
(218) 722-8992

727-1767

722-7091

to order pick up  
at Base Bldg. 240  
at 1630. They can not  
deliver intrastate; therefore,  
they can not deliver empty  
air bottle back to Shakopee,  
MN (Air Products).  
(612) 633-7300

Called Hyman Freight  
Audit office  
to pick up air bottle  
at Base Bldg 240

→ will pick up Tuesday  
afternoon ~ 1400

→ to be delivered to Air Products  
in Shakopee, MN  
arrived at Site 21

- RREM on site

X with Patrick

825

7/25/94 105

- Walk over site with  
surveys and provided them  
with updated proposed  
locations from June w/p.

- Surveyors had only  
calculated elevations at  
top of protective casings  
not top of riser or  
existing monitor wells →  
need to measure the height  
from the protective casing  
to the top of riser.

Surveyors left Site 21  
→ will return at -

~ noon or afternoon

905

021-026 MW

PID 0

ppm

w.L. 7.86

TOC

T.D. 20.22

TOC

h = 12.36

$V = (0.163) (12.36) = 2 \text{ gals.}$

$V \times 3 = 6 \text{ gallons}$

- Calibrate H<sub>2</sub> Dec  
conductivity / temperature / pH  
meter. Serial # 9402  
Beta Technology Inc.

V, H 2-point



106

7/25/94

Conductivity Calibration  
1000  $\mu S/cm$  Lot 94E (8270)  
pH 7 H silver doctments 603104  
pH 10 Union Lot # XULA

Start purging using a  
2" PVC banner

Lab	Temp	Cond.	pH	Clarity
60	59.8	583	6.42	clarity
8	56.4	645	6.41	clarity
10	58.1	797	6.63	clarity
12	59.2	857	6.65	"
14	56.9	914	6.67	"
16	57.8	1030	6.65	"
18	58.6	1106	6.63	"
20	60.0	1108	6.64	"
22	59.9	1103	6.63	"
23	59.3	1133	6.97	W.L. 8.96' TOX

Stopped purging  
59.3  
Collected 021-026mw-  
3-4% VOC HCL GW02

1-500ml Poly Netele HNO<sub>3</sub>

- collected 1L to allow

2000 silt to settle out for

netele then decant into 500-

ml Poly bottle preserved with HNO<sub>3</sub>,

7/11/94

7/25/94

607

Site 21 W.L. data

EXP

905 021-026mw	W.L. 7.86' TOC
1145 021-012 PM	W.L. 7.60' TOC
PID 0 ppm	T.D. 17.19' TOC
1147 021-010mw	W.L. 6.5' 7.00' TOC
PID 0 ppm	T.D. 17.56' TOC
1155 021-013 PM	W.L. 13.17' TOC
PID 0 ppm	T.D. 18.27' TOC
1200 021-009mw	W.L. 11.65' TOC
PID 0 ppm	T.D. 19.92' TOC
1207 021-014mw	W.L. 4.96' TOC
PID 0 ppm	T.D. 14.82' TOC
1225 to lunch	
1304	arrived at Site 21

to meet surveyor (RREN)

OPTech / Kathryn Pettitt

Curben Toner

- tried to contact mark

Easwaran (OPTech) at home

yesterday to find out if the

field crew needs the

GC, HMK, MyDuc, and/or

PID

We can not repeat me during the

day as well. I can not reach him.

108

7/25/94

Site 18 W.C. Data  
1355 018-005mw W.L. 7.26 TOC  
PID 0 ppm T.D. 14.95 TOC  
2.1" TDR  
TOR

1400 018-004mw W.L.  
+PID ppm T.D.

TOPC  
TOR

018-004mw — Could not take measurements because near ~~well~~ hot-headed up against the protective casing making it impossible to unlock monitor well.

1410

Collected Field Blank  
018-FB01

1420

3-40 ne VOA HCL  
Collected equipment Site 18  
waste of stainless-steel hand auger  
3-40 ne VOA HCL

Kathy Pittelott

1430

Collected  
waste  
stainless-steel  
for sediment sampling.  
HCL

3-40 ne VOA  
1 L w/ SVOA  
1 L w/ Pest  
1 L TPH  
1 L Acl

1-500 ne Poly metals HNO<sub>3</sub>

1445 Surveyor already surveyed Site 18 - off site

1530 Arrived at Site 17

Site 17 W.L. ~~off~~ Data  
017-008mw W.C.  
T.D.

1545 Went back to Hanger to pack → AFB Freight will pick up at 1630

1630 Arrived at Base Shipping and Receiving to meet AFB Freight to ship  
(1) large box  
(1) cooler  
(1) water cooler  
(1) hand auger kit

Kathy Pittelott

7/25/94

109

Equipment Site 21 - stainless-steel hand auger for sediment sampling.  
HCL

Acl

1-500 ne Poly metals HNO<sub>3</sub>

1445 Surveyor already surveyed Site 18 - off site

1530 Arrived at Site 17

Site 17 W.L. ~~off~~ Data  
017-008mw W.C.  
T.D.

1545 Went back to Hanger to pack → AFB Freight will pick up at 1630

1630 Arrived at Base Shipping and Receiving to meet AFB Freight to ship  
(1) large box  
(1) cooler  
(1) water cooler  
(1) hand auger kit

Kathy Pittelott

110

7/25/94

- Dropped off empty air bottle at shipping and receiving so Hyman Freightway (Delux) can pick up at 1400 7/26/94. Shipping and receiving already have closed.  
154s Collected field blank

1 L for Site 17: OFA-FBO1

1 L Amber SVOA

1 L Amber TPH HCL

1700 Back at Hanger<sup>103</sup> to pack off samples to ship to SPL Lab.

1755 • Shipped (1) ground-water sample, (1) equipment rinsewater for Site 15, (1) equipment rinser for Site 17, (1) field blank for Site 17, (1) field blank for Site 18, and (1) trip blank to SPL Lab via Federal Express, Air Bill #

• Shipped GC HMX, H<sub>2</sub>O<sub>2</sub> to HATCO via Federal Express, Air Bill #

1805

7/25/94

111

Returned to Hanger 103 to clean up. Discovered some soil samples (sites 17 & 21) GC screening - need to depose in the composite barrel <sup>to</sup> the appropriate site.  
1830 Left Hanger 103 for Hotel

*[Handwritten signature]*

Kathleen P. Pittelott

112

Tuesday  
+HFF weather.

7/20/94

hypothesis; not  
arrived at Site 17 -

returned. Keep to gate  
for Site 18 to personnel  
at the DEMO Bldg.

730

Met RLEM - Surveyors  
to walk over Site 17  
- should receive data  
~ 1 - 1.5 weeks.

800

Arrived at Huntington  
to meet drillers to  
move (5) 55-gallon  
drum filled with

development & purge water from  
ground-water sampling at Site 21.  
Informed Steve there the following:

Soil boring 017-013BH,  
017-015BH, and 017-017BH  
need to be grouted;

guard post in 021-026mm  
need to be painted;

8 I.D. plate needs to  
be placed in 021-026mm

Kathy Pritchett

815

Tuesday 7/26/94 113

Informed Shipping +

Receiving at bldg 240 that  
the empty bottle will be  
pick up at 1100 by  
Hymen Freightways

920

Huntingdon off Site 21

- finished moving barrels.  
Met with Capt. Steven  
Walbrun to walk

930

over Sites 21 and 17.  
all Surveyors about  
TOC

Note

~ 1015

Arrived at Site 21  
- walked over entire site

with Capt. Steven Walbrun

~ 1110

Arrived at Site 17

Walked over entire site  
with Capt. Steven Walbrun

1140

Dropped Capt. Steven  
Walbrun off at the

headquarters bldg 250

1150

Arrived at Knox lumber  
store to purchase 15 1/2"

socket wrench - Rat-det 1/2 drill,  
work gloves, and WD40 for  
rusted tools.

IN

7/26/94

115

Arrived at designated  
area for storage of drums  
from Site 21. need to  
dump soil from GC screening  
into composite soil barrel.  
- left after storage area  
→ could not remove  
lid off barrel.

Arrived at Radisson Hotel  
to pick up Ruben Torres  
(OPTECH) to deliver him to  
the airport to catch a  
1400 flight to the Hayward  
project. Sharon

Wiyate (OPTECH) had  
arrange for Ruben  
Torres to fly out of  
Oakland tomorrow at

1100 as well as myself.  
Ruben Torres is expected  
to be out of Oakland  
tonight, still able to work  
on the Hayward project  
tomorrow morning.

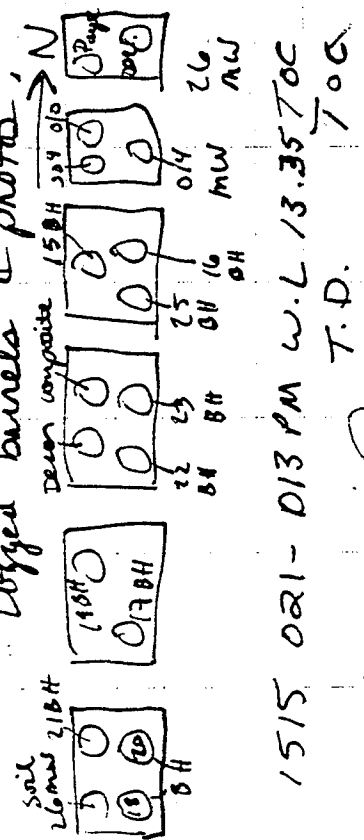
Kathy Pinckett

7/26/94

~1235 Called Northwest Airline  
to rearrange flight time  
Contact Paul Wheeler  
(ANG Reading Center) to  
inform him of Site 18 -  
The GTEX ~1500 still in  
oil sample north of Study 513.

1420 Dropped off 4-2  
methanol, eye wash,  
2 1/2" plastic cups, & 4)  
sand bucket.

1505 Finished. Deposing of  
GC screen soil samples  
in composite barrel for Site 21.  
Logged barrels a photo.



1515 021- 013 PM W.L 13.35 TOC  
T.D.

P.D.

Kathy Pinckett

11N

1155

7/26/94

Arrived at ~~AB~~ designated  
see for change of drums  
from Site 21, need to  
dump soil from GC screening  
into composite soil barrel,  
- left ~~off~~ stage area  
→ could not remove  
lid off barrel.

1215

Arrived at Radisson Hotel  
to pick up Ruben Torres  
(OPTECH) to deliver him to  
the airport to catch a  
1400 flight to the Hayward  
project. Sharon  
Wyatt (OPTECH) had  
arrange for Ruben  
Torres to fly out of  
Oakland tomorrow but  
Noo as well as myself.  
Ruben Torres is expected  
to be ~~Oakland~~ in Oakland  
tonight, ~~not~~ able to work  
on the Hayward project  
tomorrow morning.

Kathy Patterson

115

7/26/94

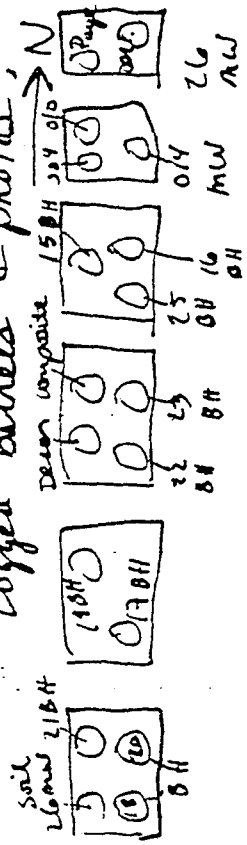
~1235 Called Northwest Airline  
to rearrange flight time  
Contact Paul Wheeler  
(ANGL Reading Center) to  
inform him of Site 18 -  
THE BTEX ~1500 ~~at~~ Pin  
soil sample north of Bldg 513.

1420

Dropped off 1/2 4-L  
Methanol, eye wash,  
2 1/2" plastic cups, & 4)  
sand bucket.

1505

Finished. Deparing of  
GC screen soil samples  
in composite barrel for Site 21.  
Logged barrels & photos.



1515 021- 013 PM W.L 13.35 LOC  
T.D. 100

P.D.

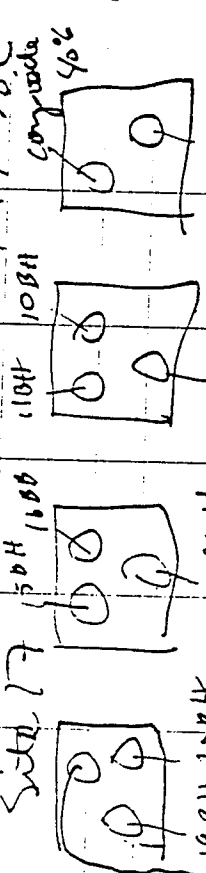
*[Signature]*

Kathy Patterson

116

7/26/94

1518 021-009 MW WL 4.70C 11.88  
 1520 021-014 MW WL 5.2370C  
 1522 021-026 MW WL 8.06 70C  
 1524 021-010 MW WL 7.23 70C  
 1527 021-012 PM WL 7.79 70C



19.3H 203H  
 009 MW 2/28/92  
 18.5H 11/11/91  
 Place "Caution Do Not Enter" Tape & Photo  
 Arrived at Hanger 103  
 to clean out supplies,  
 sweep floors, and dispose  
 of garbage

Arrived at Base Headquarters  
 bldg. 200 to drop off  
 Keys to Capt. Steven  
 Waltravety and briefly  
 discuss outstanding  
 issues. He had already  
 left for the day - left  
 Keys so they can be placed  
 on his desk.

1630

7/26/94

17

Dropped Ruben Torres  
 (OPTTECH) off at the airport  
 - He is traveling to the Hayward  
 project.  
 Arrived at Federal Express  
 office to ship the  
 following:

- 1 box overnight
  - 4 boxes economy
  - 3 boxes economy OPTTECH San Antonio
  - 1 box overnight
- changes to HMX to  
 Hayco  
 4 coolers with empty  
 sample bottles to  
 SPL Lab  
 DI water, supplies,  
 WP & H&S plan, and  
 raincoat  
 PID to Phoenix  
 project - attn:  
 fix Byrd, Jr. at  
 the Courtyard Marriott.  
 Shipped as Dangerous  
 Goods

Left Federal Express  
 office

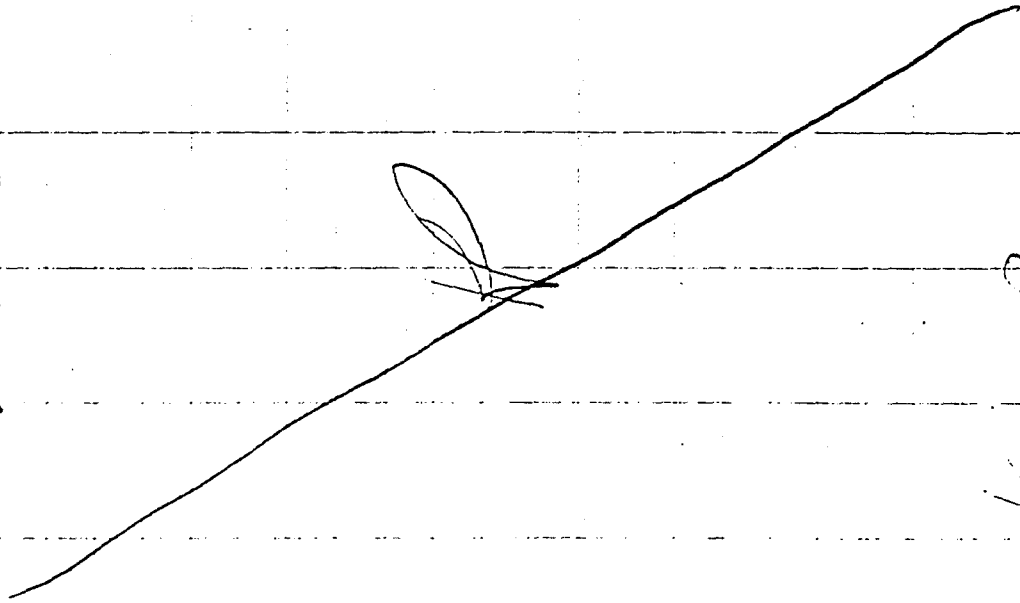
Kath Fitchett

118

600

wednesday 7/27/44

left hotel for airport  
for 730 flight to  
San Antonio



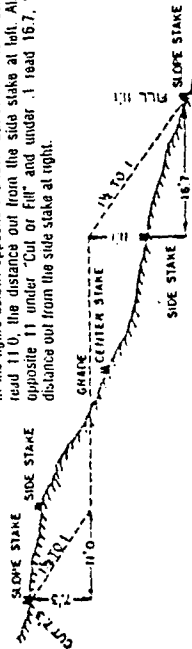
Kahn Pittsford



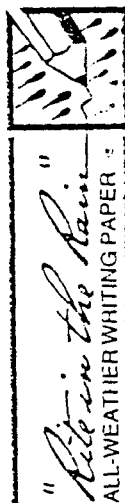
# DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width, Side Slopes 1½ to 1.

In the figure below, opposite 7 under "Cut or Fill" and under 3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under 1 read 16.7, the distance out from the side stake at right.



Distance out from Side or Shoulder Stake		Distance out from Side or Shoulder Stake									
0	1	2	3	4	5	6	7	8	9	0	1
0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0	1
1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	2	3
3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	4	5
4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	6	7
6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	8	9
7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	10	11
9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	12	13
10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	14	15
12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	16	17
13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	18	19
15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	20	21
16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	22	23
18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	24	25
19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	26	27
21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	28	29
22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	30	31
24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	32	33
25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	34	35
27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	36	37
28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	38	39
30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	40	41
31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	42	43
33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	44	45
34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	46	47
36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	48	49
37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	50	51
39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	52	53
40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	54	55
42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	56	57
43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	58	59
45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	60	61
46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	62	63
48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	64	65
49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	66	67
51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	68	69
52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	70	71
54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	72	73
55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	74	75
57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	76	77
58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	78	79
60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	80	81



Name Joe Byrd, Jr  
 Project Serentista  
 Address 4100 NW Loop 410, #230  
SAN Antonio, TX 78229  
 Phone (210) 731-0000 1-800-677-8072

Project Duluth 1308-101  
 Capt. Stephen WABROWETZ  
148 FG/LGPT Bldg. 240  
4625 Dence / D, MN 55811  
(218) 723-7475

"Rite in the Rain" - a unique all-weather writing surface created by W. F. G. / F. G. / F. G. of the written image. Makes it possible to write sharp, legible data in any kind of weather.

4680 Vapier  
J. L. DAVIS  
TACOMA, WA 98421-3696 USA  
(mail)

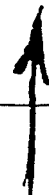
TRAVEL DAY 10 July 1964  
 SUNDAY  
 0948 Leave home

1848 AT Hotel

90hrs

Air Products  
 373 Canterbury Rd.  
 Shakopee, MN 56379

CONTENTS		
PAGE NO.	REFERENCE	DATE
	FEDEX 1342-6486-1	
	HARCO 1-800-332-0935	
	SCOTT ROBINSON	
	Air Products (415) 961-4560 ext 116	
	(T5509) CALIFORNIA	
	1-800-741-9000	
	OT number	
	210-731-0000-6335	
	RADISSON Hotel	
	505 W. Superior St.	
	D, MN 55802	
	(218) 727-8981	
	Air Products (612) 445-4610	
	MINNEAPOLIS	
	PHOTOVAC • PASCAL	
	(516) 254-4283 • ROBERT	



MONDAY

DAY 11

(3)

11 July 1994

0630 Leave hotel  
Breakfast (0.7 hr)  
0755 On base

Weather:

Lo: 55

Hi: 75

50% + rain & thunderstorm

Meet w/ Capt. Wabrowitz  
Takes us to check  
equipment

Go to GC Bldg. & unload  
boxes

0900 Meet w/ base CE to  
(Bruce Berg)  
mark out utilities at  
Site 21

0921 Call Air Products to  
check on air delivery

5

AIR gauge on GC is  
not reading properly. It is  
Reading ~~on~~ psi instead of 1500 psi

1330 CALL MATT ALEXANDER  
NO ANSWER. B Bank down  
GC. Return to Site Z1  
to ride KP & RT

1345 leave B103  
1400 AT Site Z1. They don't need  
my help.

1405 CALL MATT ALEXANDER  
Discuss GC.

1420 bet KP, RT. Go to B103

1440 GC is empty of Air.  
Refill Tank. Time it to  
see how long before  
empty.

1500 Call Matt Alexander.  
Decide to send it back.

1505 CALL HAZCO. ORDER NEW  
GC

0930 Go to Air Cargo to  
get equipment.

0950 At Bldg. 103 to unload  
equip & set up GC stuff

Unpacking equip ment.

1100 KP arrives at B. 103.  
Go to hardware store  
to get supplies

1135 leave hardware store  
Go to Base to stake  
out AREAS.

1140 lunch 12.8 (0.6 hr.)

Head to base

1221 At site Z1  
KP, RT stake out site  
I go check on deliveries

1230 Zero grade Air is in.  
Take Air bottle to  
B. 103

(7)

Scott Robinson determines  
that the fifth line is  
faulty. He is sending  
another

1525 Pack up GC. Go find  
PK & RT

Go to dallas office

1543 At dallas office

leave dallas

Go to Site 17

1626 Arr 17

inspect ice chests from Lab.  
Pack truck for tomorrow

1702 leave base. Go to  
Target to get  
Supplies

1730 leave Target

At Hotel

9.9 hrs

Jack Byrnes

TUESDAY

12 JULY 1994

0600 Leave hotel

0615 Breakfast (0.7)

0707 On BASE  
Sett-up Decon at  
Site Z1  
Decon equipment

0820 Go to FEDEX to get  
package (Air Base from HAZCO)

0830 At FEDEX. They don't allow  
pick-up until 0900. Go get  
ICE.

0836 At B. 103.  
Decon GC Equipment

0903 Go to FEDEX to get hose  
0918 Go to Site Z1 to get  
some equipment  
Aid in more set-up for  
Drbg.

WEATHER 10 AMY

Hi: 80  
Lo: 55

Windy, slight chance of rain

0940

Safety Meeting

KP, RT, John Maris, JB

DRILLERS: Steve, STARK

Jim ~~Saugesad~~  
Saugesad

Topics: H.HATS, S. GLASSES,

S.T. BOOTS, HEARING PROTECTION,

TRAFFIC IN AREA, NOISE FROM

JETS, Slope of drilling AREA

0945

GoLo B. 103

TRY out new hose

AT B103. MAKE 1ppm

# 100 PPb BTEX STD's.

Set-up GC.

1030

Calibrate GC.

(11)

1043 100 PPb BTEX STD.

Resulting chromatogram is very messy

1052

Air BLANK

Very Messy

Both have in common

18.8s → 12.6s

24.5s → 24.2s

301.9s → 302.7s

110.8 → 106.9s

TRY to ventilate AREA.

1059

Air BLANK

18.6s

299.5s

106.3s

1108 A.A. BLANK

18.6s

28.4s

110.5s

301.9

1119 CALL MATT ALEXANDER  
to discuss this.

He recommends:

- DRY-RUN GC RUN
- INCREASE OVEN Temp.
- 1 ppm std.

1133 DAY RUN ON GC

18.7s

110.8s

301.9s

INCREASE OVEN Temp to  
50°C.

1208 DRY RUN ON GC

SAME AS BEFORE

1218 DAY RUN ON GC

SAME OL' STUFF.

1229

Take Tape to FAX to  
MATT

1240

At Site 21. Pick up JM  
Go to hotel to FAX  
AND use phone

1325

At hotel. TALK TO MATT.  
FAX MATERIAL.

1345

Lunch (0.5 hrs)

1422

On Base  
CALL MATT ALEXANDER  
to find out what to  
do with GC.

- change EVENT setting?
- MORE day RUNS
- SET EVENT 3 to 0.0-5000.  
EVENT 5

5-4 in Manual

sample loop is contaminated

1450

Leave Site 21. Go to B103

1502

At B103.

(13)



change. Event settings  
Event: 3 0.0  $\rightarrow$  500.0 sec  
Cycle  $\rightarrow$  600 seconds

1504 DRY RUN  
Still has peaks. Not as  
bad as before

1516 DRY RUN. Same old thing  
(SOT)

1527 DRY RUN, SOT

1540 DRY RUN. SOT

During dry runs am preparing  
VOAS of soil samples from  
morning's drilling activities

1552 DRY RUN.  
Charging Event 3  $\times$  0.0.  
Do Count 5 0.0  $\rightarrow$  500.0.

A flat line down middle  
of chart.

(15)  
1603 DRY RUN. Turn off ES  
Set E3  $\times$  0.0  $\rightarrow$  500.0 sec.

SOT!!!

1615 BRY RUN.

CALL MATT ALEXANDER. DURING  
RUN. Decide to RETURN  
GC.

Linda @ HAZCO.

1640 Pack-up GC For Return  
shipment.

1700 leave B103. Go to FEDEX.

1708 Done at FEDEX  
Go to Site 21

1715 at Site 21  
Meet Jim

1725 Go to B103

1730  
1800

AT B103  
hid in sample prep for  
shipment.

Prepare VOAs samples for  
GC runs

1800

leave B103.  
Go to ~~B103~~ Site 2/ to  
get J.M.

1811

JM not here. check w/  
gate guard

1820

leave base

1836

AT Hotel

WEDNESDAY 13 July 1994

0600 leave hotel

Breakfast (0.7 hrs)

0700 On Base. At B103 to

ice chest.

0714 AT Site 2/  
Set up Decon Area.

Weather: Cool

Hi: 75°  
chance of rain. Coal front  
moving through.

0730

Safety Meeting  
JB, KP, RT, Jim S, Steve S.

Slope on hill, chance of rain,  
wearing of safety vests.

0737

Sped-in

11.4 hrs

Garbyrd, JR

(19)

Set-up GC & calibrate

GAIN 100  
GAS FLOW 10.9  $\mu$ l/min  
OVEN 40°C  
ANALYSIS TIME 400 s  
WINDOW  $\pm 10\%$   
MIN. AREA

1034 100 ppb BTEX std  
ABORT RUN  
RESET GAIN  $\pm 10$

1037 DAY RUN TO PURGE  
1046 100 ppb BTEX std  
ABORT GAIN is too high  
RESET GAIN to 2

1049 DAY RUN TO PURGE  
1057 100 ppb BTEX STD  
TOO SMALL  
RESET GAIN to 5

1106 100 ppb STD  
1120 100 ppb STD

NOT getting good readings  
Remake STANDARDS

JM Takes care to use phone

JM back on location  
Go to FEDEX to get  
new GC

AT FEDEX  
NO GC. FEDEX MECHANICAL  
FAILURE IN FEDEX'S  
MEMPHIS DISTRIBUTION POINT.  
They said to check back  
AT 0930.

0903 B  
0900 AT B103, MAKE  
1 ppm & 100 ppb BTEX  
STDs

0930 Go to ~~FEDEX~~ B SITE 21  
to advise them of  
situation

0945 leave 21. Go to FEDEX

0954 GC is in. Go to B103

1000 AT B103

(21)

1140	100 ppb std. looks better				1234	100 ppb std.
1150	100 ppb std. INCREASE ANALYSIS TIME TO 450 s				1245	021-025 BH 1.5' - 2.0' Benzene 82 ppb Toluene 6 ppb
1200	100 ppb std. INCREASE AT TO 500 s INCREASE AIR FLOW TO 13.8 L/min DECREASE AT TO 400 s.				1259	021-025 BH 10' - 11' 10g ALK ND's
1218	100 ppb std. FINALLY. A Good Picture				1308	10' - 11' Reshape ALL ND's
	AREA: 1.4 V <sub>s</sub> ↓ 1,400 mV <sub>s</sub> = 70 20	1 V <sub>s</sub> = 1000 mV <sub>s</sub>			1316	021-025 BH 14.5' - 15.0' 12g Benzene 58 ppb
	Set Area to 50 mV <sub>s</sub>				1328	021-023 BH 1.5' - 2.0' 12g Benzene 73 ppb
1230	Set Library Increase AT 430 s					

$$\frac{1.2}{\frac{200}{300}} = 1.8$$

1338 100 ppb BTEX STD  
need to RECALIBRATE

$$\frac{5,800 \text{ mVs}}{200} = 290$$

Change Area to 200

1414 Air Blank  
Benzene 38 ppb

1423 100 ppb std. No Good

1432 100 ppb std, Looks Great  
Benzene 91 ppb  
Toluene 91 ppb  
E-BEN, mpxy 272 ppb

1442 021-023 BH  
10.5' - 11.0' 12g  
spikes off chart  
Reduce Gain to 5

1453 100 ppb std

Calibrate to benzene

E-BENZ & mpxy out of  
120% range.  
ERASE & RECALIBRATE

1506 100 ppb std

$$\frac{2,200 \text{ mVs}}{20} = 110 \text{ mVs}$$

Set Area at 100

1517 Air Blank  
22 ppb Benzene

1527 021-023 BH  
10.5' - 11.0' 12g  
Benzene 647 ppb  
Toluene 333 ppb  
E-B-mpxy 137 ppb

Re Calibrate to 1 ppm

itself

1 ppm std.  
Printer typed all over  
can not read any thing

~~1 ppm std.~~  
AIR BLANK

1 ppm std.

$$\frac{7,944 \text{ mVs}}{240} = 39.5$$

AREA = 50 mVs

Library Set. Ready to Roll

021-023 BH  
10.5' - 11.0' 12g

Benzene 1,110 ppb  
Toluene 118 ppb  
E-BEN, MPXY 61 ppb

1634

021-022 BH  
6.0' - 6.5' 10g

Printer messed up

Reshad 021-022 BH  
6.0' - 6.5' 10g

Benzene 399 395 ppb  
Toluene 287 ppb  
EB, MPXY 220 ppb

1700 021-024 BH  
16.5' - 17.0' 12g

1,070 ppb Benzene

~~021-022 BH~~

1715 021-022 BH  
11.5' - 12.0' 10g

Benzene 142 ppb  
Toluene 10 ppb  
EB - MPXY 11 ppb

1550

1601

1610

1621

1726 1 ppm std  
Benzene 1,080 ppb  
Toluene 976 ppb  
EB-MPX 2,710 ppb

1736 Air Blank  
ALL ND's

1749 021-022 BH  
14.5'-15.0' 10g  
Benzene 240 ppb  
Toluene 12 ppb  
EB, MPXY 12 ppb

1800 021-021 BH  
14.5'-15.0' 12g

Printer Malfunction  
1810 021-021 BH  
14.5'-15.0' 12g  
Benzene 105 ppb  
EB-MPX 59

1821 021-023 BH  
14.5'-15.0' 10g  
Benzene 103 ppb

1833 021-024 BH  
10.5'-11.0' 14g

Benzene 6,130 ppb  
Toluene 146 ppb  
EB-MPX 776 ppb

1845 1 ppm std  
Benzene 845  
Toluene 674  
EB-MPX 2,010

Need to Recalibrate.  
ERASE LIBRARY 2

1959 1 ppm BTEX STD

Benzene @ 6.6 V's  
 $\frac{6,600 \text{ mVs}}{200} = 33$   
Set AREA  $\rightarrow$  20mV's

2030 AT HOTEL

1912 AIR BLANK  
ALL ND's

1924 021-024 BH  
10.5' - 11.0' 14g.  
25ul injection (4X dilution)

BENZENE 1,080 ppb  
TOLUENE 86 ppb  
E BENZ - MPXY 382 ppb

done w/ samples that  
had high PID readings.

1940 1 ppm BTEX STD  
Benzene 1,130 ppb  
Toluene 1,110 ppb  
EB - MPXY 3,400 ppb

1949 AIR BLANK  
ALL ND's

2000 BREAK DOWN egair ment.  
2008 LEAVE BASE

Joe Byrd



# Weather

Hic: 60's

30% chance of showers

(31)

1211 71

Thursday 14 July 1994

0600 leave hotel

Break fast (0.7 hr)

Drop JM off at airport

0700 On base

Set-up GC, Buy ICE.

0725 Goto Site Z1.

0735 At Site Z1

0745 Safety Meeting

- Cold & wet. Be careful not to chill.

- Slippery conditions

- Watch for extra clothing getting hung-up.

JB, RT, KP, SS, BS

0750 Goto B103

Decon was

Set-up GC

Prepare 1 ppm & 100 ppb  
BTEx STD's

0845

100 ppb std.

Aborted Run. Used syringe  
w/ defective needle.

0847

Dry Run to Purge

0859

100 ppb BTEx STD

Gain is too high.

Reset to 5

Reset Air Flow to 12  $\mu$ l/min

0915

100 ppb BTEx STD

$$\frac{977.8 \text{ mVs}}{20} = 48.9$$

Set min Area to SD

Calibrate

0927

Air blank

ALL ND's

0937

021-024 BH

2.0'-2.5' 10g

ALL ND's

0948

021-021 BH

2.0'-2.5' 10g

ALL ND's

0959

021-020 BH

10.5'-11.0' 10g

ALL ND's

1008

021-021 BH

6.5'-7.0' 10g

ALL ND's

1018

021-024 BH

6.5'-7.0' 10g

ALL ND's

1028	100 ppb	BTEX	STD.	1138	021-024 BH 6.5' - 7.0'	Reshoot 10g
	Benzene	88	<u>RAL</u> 100		<u>ALL ND's</u>	
	Toluene	86	98			
	E-Benz	31	35			
	MP-Xyl	92	105			
	Recalibration Needed					
1040	Go to Site 21					
1056	Get Samples					
	Return to B103					
1110	<del>ABT</del> At B103					
1115	100 ppb BTEX	STD.		1158	021-022 BH 1.0' - 1.5'	79 ppb 10 ppb 10g
	92.4.9 mVs = 46 20				<u>ALL ND's</u>	
	Set Area to 50 mVs			1209	021-020 BH 6.5' - 7.0'	12g
1128	Air blank				Benzene	100 ppb
	ALL ND's			1220	021-020 BH 1.5' - 2.0'	12g
					<u>ALL ND's</u>	

1230	100 ppb BTEX	STD	1330	021-018 BH 2.0'-2.5'	10 g
	BENZENE	CAL		ALL ND's	
	87 ppb	100 ppb			
	TOLUENE	87 ppb			
	E-BENZ	94 ppb			
	MP-XYL	181 ppb			
1243	AIR BLANK		1341	021-018 BH 13.5'-14.0'	12 g
	ALL ND's			ALL ND's	
1255	CALL HAZCO	about	1350	021-018 BH 9.5'-10.0'	12 g
	GC PRINTER.	I have had		ALL ND's	
	ADVANCE TAPE	during printing			
	for last hour.				
1305	Go to Site 21		1404	021-019 BH 14.5'-15.0'	10 g
	They have gone to lunch			BENZENE	7 ppb
	Go to B103.				
1322	At B103		1414	021-019 BH 1.5'-2.0'	12 g
	Painters have moved A freshly			ALL ND's	
	Painted Trailer into hanger. Vent-				
	ilate as much as possible.				
	does not show-up too bad on				
	Readings				

(39)

1424 100 ppb BTEX STD

BENZENE 80 ppb  
TOLUENE 67 ppb  
E-BENZENE 66 ppb  
MP-XYLENE 109 ppb

CAL

100 ppb  
84 ppb  
83 ppb  
187 ppb

1441 Air Blank  
ALL ND's

1451 021-016 BH  
2.0' - 2.5' 12g

ALL ND's

1503 021-016 BH  
6.5' - 7.0' 10g

ALL ND's

1513 021-016 BH  
10.5' - 11.0' 10g

ALL ND's

1525 021-019 BH  
6.5' - 7.0 10g

ALL ND's

1535 021-019 BH  
10.5' - 11.0' 12g

BENZENE 16 ppb

1545 100 ppb BTEX STD

BENZENE 127 ppb  
TOLUENE 106 ppb  
E-BENZENE 102 ppb  
MP-XYLENE 164 ppb

CAL

100 ppb  
83 ppb  
80 ppb  
128 ppb

Need to Recalibrate

1558 100 ppb BTEX STD

884.3 mV  
20 = 44

Set to 50 mV  
AREA

(41)

1612	Air Blank →	ALL ND's	1736	021-015 BH 13.0'-13.5'	10g	
1622	Go to Site Z1			ALL ND's		
1639	Get samples for analysis			100 ppb BTEX STD		
1648	Go to B103 At B103		1745			CAL
	Prepare soil for analysis			BENZENE	85 ppb	100 ppb
				TOLUENE	79 ppb	93 ppb
				E-BENZENE	68 ppb	81 ppb
				MP-XYLENE	133 ppb	157 ppb
1704	021-015 BH 1.5'-2.0'	10g	1758	Air Blank		
	ALL ND's			ALL ND's		
1714	021-015 BH 6.5'-7.0'	10g	1810	Shut down GC		
	ALL ND's			Gave pages 5 & 6 of GC Summary to KP for her copying purposes.		
1723	021-015 BH 10.5'-11.0'	12g	1822	Leave B103		
	ALL ND's					

1836 AT Hotel

DAY 5

(43)

15 JULY 1994

FRIDAY

0600 leave hotel

BREAKFAST (0.6 hrs)

0700 AT B103.

GC. Set-up.

Make 1 ppm std +  
100ppb stds (BTEx)

0727

Go to Site 21

0736

AT Site 21

Aide in set-up for  
drilling

0800

Drillers here

Safety Meeting: JB, KP, RT, SS, JS

• Be careful around rig.

• Weather Hi: 70's

Very Nice Day

0816

Take Steve to get  
bras sleeves & eyewash

11.9 hrs

0927	BACK AT Z1	0936	100 ppb BTEX STD
0831	Go to B103		1.5 V <sub>s</sub>
0840	AT B103		↓
	GC has not warmed up. ← LAMP NOT READY →		$\frac{1,500 \text{ mV}_s}{20} = 75$
0918	Turn off GC, let GC cool down.		Min Area → 50 mV <sub>s</sub>
	GC is on and ready to be programmed.		Set Library
0925	100 ppb BTEX STD : Disregard this shot. I forgot to set gas flow rate	0952	AIR BLANK ALL ND's
	Set Flow Rate: 12.3 $\mu\text{l}/\text{min}$ Gain: 5 Oven Temp: 40°C Anal. Time: 430 sec Window: 110%	1000	Go to Size 21. Get samples. Return to B103
	Min Area: 50 mV <sub>s</sub>	1024	Prepare samples.
		1029	<sup>27</sup> 021-017 BH 2.0'-2.5' 12g ALL ND's
		1038	021-017 BH 5.5'-6.0' 10g ALL ND's



(47)

1019 021-017 BH  
10.5'-11.0'12g ALL ND's1100 021-017 BH  
14.5'-15.0'

12g

ALL ND's1124 100 ppb std  
BENZENE  
Toluene  
ETHYLbenzene  
MP-Xylene87 ppb 100 ppb  
95 ppb 107 ppb  
100 ppb 113 ppb  
193 ppb 217 ppbCAL

1135 AIR BLANK

ALL ND's

1145 Goto Site 17

1154 AT site 17

Get soil samples

Goto B103

AT B103

PREPARE samples for  
GC Analysis1241 021-026 MW  
2.0'-2.5'

10g

ALL ND's1250 021-026 MW  
8.5'-9.0'

10g

ALL ND's1300 021-026 MW  
11.0'-11.5'

12g

ALL ND's1309 021-026 MW  
16.5'-17.0'

10g

ALL ND's

1319 100 ppb BTEX STD.

115 ppb

116 ppb

120 ppb

223 ppb

CAL

100 ppb

101 ppb

105 ppb

194 ppb

1332 AIR BLANK ALL ND's

1345 Goto Site 21

1356 AT Site 21

1405 Leave base  
lunch

1512 ON BASE

(1.1 hr)

MONDAY 18 July 1994

Break down Site Z1

1540  
1550

leave site Z1  
At B103  
unload & store again  
for weekend

0600 leave hotel

Break fast (O.F)

Get ICE

0658 At B103

Do Rinseate blanks

Pack ICE chest  
lock & Secure B103

1655 KP & RT go to FedEx  
leave base

1724 At hotel

Load Truck for today's  
activities.

Set-up GC. Don't calibrate.  
yet because it will be a  
while before drilling  
starts & I will need to  
recalibrate by then.

KP leaves to meet w/  
driller

Build 1 ppm & 100 ppb  
BTX STD

0805 KP & driller arrive.  
Set-up to down rig in  
preparation for Site 17.

Joe Byrd Jr

9.7 hr

0813	CALL MARK ESCOBAR. I AM HAVING TROUBLE WITH THE 10ul SYRINGE. TALK TO MATT ALEXANDER. <del>I need to go</del> NEITHER ONE IS IN. I WILL CALL BACK LATER.	1000	Drillers go Decon Rig.	(51)
		1020	DONE deconning Rig. Drillers go to Site 97.	
		1023	BEGIN GC CALIBRATION to 100 ppb.	
0825	Go to Site 17 to aid in set-up	1035	100 ppb BTEX STD Chromatograph is small Increase gain to 10	
0900	Go to Bldg CALL OFFICE TALK to Sandy Ruiz. MATT & MARK still not in. WILL CALL BACK AFTER 1:00 pm. Waiting on drillers to arrive		ERASE LIBRARY 1. 100 ppb BTEX STD.	
		1046	$2.2 \text{ } V_s = \frac{2,200 \text{ mVs}}{20} = 110$	
0948	Rig arrives. Drillers park it in Decon Area & Leave	1055	Set min Area to 100 Set Library 1	
0958	KPD I go to Site 17. Drillers are there They dropped off equipment	1100	Air blank. ALL VDS	
		1109	Methanol	

53

1118	Go to Site 17 to get samples	1229	017-015 BH 1.0'-1.5' 12g	ALL ND's
1127	Back at B103 Prepare samples	1238	017-015 BH 5.5'-6.0' 12g	ALL ND's
1136	017-016 BH 1.5'-2.0' 12g	1249	100 ppb BTEX STD BENZENE 90 ppb TOLUENE 86 ppb E-BENZENE 80 ppb MP-XYLENE 217 ppb	CAL 100 ppb 95 ppb 89 ppb 242 ppb
1147	017-016 BH 5.5'-6.0' 12g		ERASE LIBRARY RECALIBRATE	
1156	Go to Site 17 to get soil samples.	1202	100 ppb BTEX STD	
1201	Back at B103 Prepare SATL soil samples for GC analysis.		2.1 VS $\Rightarrow$ 100 mVs setting Set LIBRARY	
1210	017-016 BH 9.5'-10.0' 16g	1313	AIR BLANK	ALL ND's
1220	Go to Site 17 to get soil samples	1322	017-015 BH Reshoot 5.5'-6.0' 12g	ALL ND's
1227	Back at B103			

we will send stuff to  
FEDEx office.  
CALL MARK ESCOBAR.

Go to Site 17.  
During Rain shower (T-store)  
PID got wet. Now it doesn't  
Run. Call PID company to  
See if it can be  
Trouble shot over the  
phone

CALL Determinator Co.

Go to Site 17. Bring PID  
back to B103.

Prepare Samples

017-015 BH  
9.0'-9.5'

ALL ND's

12g

017-013 BH  
5.5'-6.0'

ALL ND's

10g

Go to Site 17 to get samples  
At B103. Prep. Samples

(55)

ALL ND's

017-013 BH  
2.0'-2.5'

1514

12g

ABORTED  
RUN

017-013 BH  
9.5'-10.0'

1528

12g

ALL ND's

017-013 BH  
9.5'-10.0'

1537

12g

100 ppb BTEX STD

1546

BENZENE 90 ppb  
TOLUENE 74 ppb  
ET-BENZENE 67 ppb  
MP-XYLENE 136 ppb  
CAL 100 ppb  
93 ppb  
84 ppb  
170 ppb

AIR BLANK

1559

ALL ND's

Break down GC,  
Decon VOA:  
PACK samples for shipment  
to Lab

RT, KP go to FEDEX

~~Leave~~

Leave B103

1718

At hotel

1740

DAY 9

TUESDAY

19 July 1994

0600

Leave hotel

Breakfast (0.7 hr)

0655

On Base, at B103

Set-up GC.

Camp NOT Ready. Turn off GC, wait 20 minutes.

0725

Turn on GC.

It fires up.

0730

DAY RUN.

MAKE 1 ppm & 100 ppb  
BTEx STDs. KP is ready

to go to Site 17.

0732

Go to Site 17.

Safety Meeting. Topics

- Weather. Mostly Cldy. 50% chance of rain & T-storms.
- Beware of lightning
- Watch for snakes in grass
- Footling Awareness

11.0 hrs

Jan Byrd Jr

(57)

0750	Ad in set-up of site Safety Meeting JB, KP, RT, SS, BS. Topics on previous page	0915	At B103. Continue calibration
0805	Goto B103, Continue calibration GC. Having trouble w/ 10 µl syringe. I am supposed to receive another today, hopefully in the A.M. FEDEX RUN	0921	100 ppb BTEX STD Gain was not properly set Reset to 10.
0838	Call office. Talk to M. Henson to check on delivery. Finally get 10 µl syringe to work. Build ppm & 100 ppb BTEX STDs	0932	100 ppb BTEX STD. $1.9 \text{ mVs} \Rightarrow \frac{1900}{20} = 95 \text{ mVs}$ Set min. area: 100 mVs. Set Library
0856	Goto FEDEX Get Package. Goto Site 17. Get soil samples	0944	Air Blank ALL NDs
		0956	017-014BH 2.0'-2.5' Toluene 12g 21 ppb
		1006	017-014BH 4.5'-5.0' 10g ALL NDs
		1017	017-014BH 9.5'-10.0' 12g Toluene 22 ppb

(61)

1027	60Lo size 17. Get Soil samples. Back at B103 Prepare soil samples.				
1033					
1044	017-012 BH 2.0'-2.5' TOLUENE	12g 21 ppb			
1055	017-012 BH 5.5'-6.0' Toluene	12g 20 ppb			
1105	100 ppb BTEX Benzene Toluene E-BENZENE MP-XYLENE	82 ppb 75 ppb 77 ppb 147 ppb	CAL 100 ppb 92 ppb 95 ppb 180 ppb		
1119	AIR BLANK Toluene	26 ppb			
1131	017-012 BH 9.5'-10.0' Toluene	14g 25 ppb			
1143	017-011 BH 2.0'-2.5' Toluene	10g 25 ppb			
1154	017-011 BH 5.5'-6.0'	10g			
1203	017-011 BH 9.5'-10.0'	10g			
1244	100 ppb BTEX STD. Benzene Toluene E-BENZENE MP-XYLENE O-XYLENE	117 ppb 108 ppb 97 ppb 184 ppb 107 ppb	CAL 100 ppb 93 ppb 83 ppb 158 ppb 92 ppb		

Done with this AM's soil samples. KP & RT have gone to lunch. Prepare more VOA VIALS.

Need to Recalibrate  
EPA Library.



1258

100 ppb BTEX STD  
2.5 V3

Min AREA 100 mV

1311

AIR BLANK

ALL ND's

1322

Go to Site 17.

Get soil sample.

1340

At B103

Prepare soil sample.

1346

017-010 BH  
4.5'-5.0'

ALL ND's

12g

1400

FEDEX package is at hotel. Go get it.

1435

At site 17.

Get soil samples

Put new part on P20

1445

At B103

Prepare soil samples for analysis.

1452

017-010 BH  
9.5'-10.0'

ALL ND's

12g

1502

017-017 BH  
1.5'-2.0'

ALL ND's

10g

1511

017-017 BH  
5.5'-6.0'

ALL ND's

10g

1522

Go to Site 17.

Get last soil sample for day. Drillers have already gone.

1528

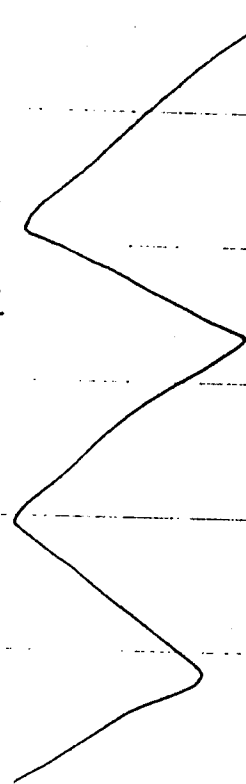
At B103. Prepare sample for analysis.

1532

017-017 BH  
9.5'-10.0'

10g  
19ppb

Tohueno



(65)

1547 100 ppb BTEX STD

Benzen  
Toluene  
E-Benzen  
MP-Xylene

72 ppb  
75 ppb  
65 ppb  
127 ppb

1723

leave FEDEX  
AT hotel

1742

1602 Air blank

ALL NDS

1611 100 ppb BTEX STD

Benzen  
Toluene  
E-Benzen  
MP-Xylene

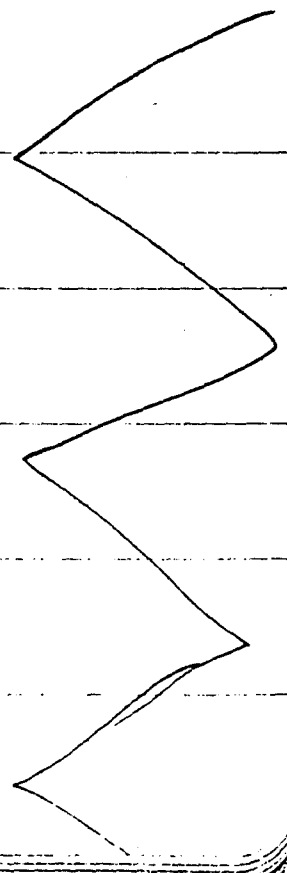
113 ppb  
115 ppb  
98 ppb  
191 ppb

CAL  
100 ppb  
102 ppb  
86 ppb  
169 ppb

1620. Shut down GC.

WRAP-UP AREA.  
KP-RT ARE doing E. blanks  
Decon Viles

1708 100 to FEDEX. leave B103  
AK FEDEX



Jan Byrd JR

#1-0 has  
11.0

DAY 10

Wednesday 20 July 1994

(67)

0600 leave hotel

Break-fast (0.7 hr)

~~Get tea~~

Go to site 17 & B103 to get supplies for well development

0705 At 021-026 MW to develop well.

0715 Driller arrives

Begin developing well

0830 Go to store to get

A MASON JAR for charity picture

No MASON JARS AVAILABLE.

0852 Return to 021-026 MW

0924 Done w/ well development.

Go to B103 to set-up GC.

0931 At FEDEx to check on deliveries

• Pick-up 6 ice chests from Lab

• Refuse Acceptance of HAZCO PID

• Be AWARE of surroundings

Return to B103.

0943 leave FEDEx

~~Go to B103~~ JB

~~At B103~~ JB

Get ice.

0954 Stop at site 17 & drop

off ice chests & ice.

1000 At B103

Set-up GC.

1030 Build 1 PPM & 100 ppb BTEX

STD's.

1046 Go to site 17 to give

Safety Mtg.

KP is not here. She is

meeting w/ basic personnel

to get clearance for

proposed drill sites.

1050 KP arrives

1053 Safety Meeting.

JB, KP, RT, SS, BS.

• Weather nice. PM. T-stops

• Be AWARE of surroundings

1055 Return to B103.

(69)

1058 AT B103

1100 100 ppb BTEX STD.  
1.3 Vs

$\frac{1.30 \phi mVs}{2 \phi} = 65 mVs$  Setting

Set Min. Area To 80 mVs.  
Set Library

1115 Air Blank.

Go to Site 17 to get soil samples

1132 Prepare soil samples.

1140 017-018 BH  
2.0'-2.5'

ALL ND's 10g

1150 017-018 BH  
4.5'-5.0'

ALL ND's 10g

1200 Goto Site 17 for soil samples

1213 Back at B103  
Prepare samples

1218

017-018 BH  
9.5'-10.0'

ALL ND's  
12g

DRILLERS / KP & RT ARE WAITING  
for phone CO. to arrive &  
approve drilling locations.

1238

100 ppb BTEX STD

CAL

Benzene 89 ppb 100 ppb  
Toluene 72 ppb 80 ppb  
E-Benzene 83 ppb 93 ppb  
MP-Xylene 151 ppb 169 ppb

1257

100 ppb BTEX STD

CAL

Benzene 149 ppb 100 ppb  
Toluene 180 ppb 92 ppb  
E-Benzene 197 ppb 89 ppb  
MP-Xylene 197 ppb 165 ppb

Need to ERASE LIBRARY  
& RECALIBRATE

7 miss read STUFFS. WILL  
go ahead & RECALIBRATE

1309	100 ppb BTEX STD 2.0 VS → 100mV, setting Det Library	1421	017-019 BH 5.0'-6.0'	10g	ALL ND's
1320	AIR BLANK	1431	017-019 BH 9.5'-10.0'	10g	ALL ND's
1330	Goto Site 17. Sample Return to B103 Prepare sample.	1442	Goto Site 17 Get soil sample.		
1338	017-019 BH 1.5'-2.0'	1445	At B103 Prepare soil sample		
1348	CALL M. Henson to find out about shipment of supplies that has not arrived will need to call him back	1450	017-020 BH 2.0'-2.5'	12g	ALL ND's
1353	Goto Site 17. Get soil samples	1500	Goto Site 17. Get soil samples		
1406	Stop & gas-up car At B103 Prepare samples	1507	Return to B103 Prepare soil sample		
		1514	017-020 BH 5.5'-6.0'	10g	ALL ND's

(73)

1525 100 ppb BTEX STD  
Benzene 84 ppb  
Toluene 85 ppb  
E-Benzene 77 ppb  
MP-Xylene 150 ppb

CAL  
100 ppb  
101 ppb  
92 ppb  
180 ppb

1718

leave base

Observe drillers has they  
move barrels & load  
equipment & leave site.

1536 Air blank

ALL ND's

1735

leave site 17.  
lock gate

1545 017-020 BH  
9.5'-10.0' 12g

ALL ND's

1800 AT hotel

1555 100 ppb BTEX STD  
Benzene 102 ppb  
Toluene 100 ppb  
E-Benzene 88 ppb  
MP-Xylene 171 ppb

CAL  
100 ppb  
99 ppb  
87 ppb  
169 ppb

1608 Air blank.

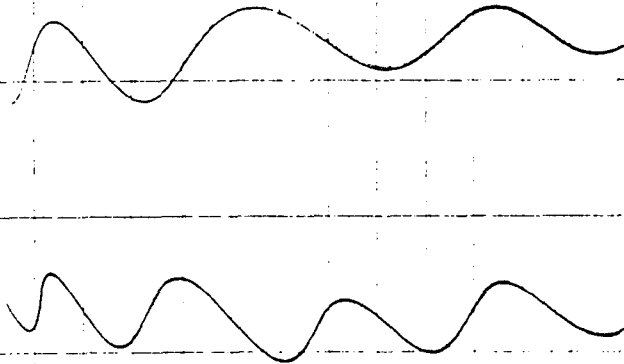
ALL ND's

1618 Shut-down GC.  
Decon Viles.

1647 leave B103.  
AT Site 17.  
Aid in Site break-down

Free Byul go

11.3 hrs



DAY 11

Thursday

21

July 1994

0630

leave hotel

break first

~~get ice~~

(0.5 hr)

0720

at B103

Set-up truck for hand augers.

0810

Go to Site 21 to meet  
driller to move drums.

Out Site 21

- Move drums
- Put barrels at 4 MW's

0820

at Site 21. Waiting on  
drillers to arrive.

0850

Drillers on Site. Begin  
moving barrels.

0916

Find unmarked barrels.  
Go to B103 to get paint  
stick. Now are there.

0930

Back at Site 21. It is raining  
heavily. Drillers are waiting  
out rain.

(75)

1020

RAIN lets-up.

1022

NOT really. Drillers go to  
yard to wait out rain.

1023

Go to FEDEX to check on  
delivery from Fisher-Seward's

1033

Package is in. Go to  
B103 to set-up GC for so  
that it can warm up a  
while.

1046

Return to Site 21

1054

at Site 21. Waiting on  
drillers.

1100

Drillers arrive

1101

Safety Meeting

- Be AWARE Around moving  
vehicle
- Be careful on wet slope w/  
footing & rig.
- Be careful w/ barrels in  
air.

SB, JS, Paul

1245

Done moving barrels

(77)

Go to B103 to see if KP &  
RT are done w/ hand  
Augering.

1258 AT B103. No KP-RT.  
~~wait on~~

Go to Chalket to see if  
they are having lunch

1303 They are not here.  
Go to B103.

1309 AT B103. Waiting on KP-RT

1350-1345 KA-RT ARRIVE. They  
have been rained out.

1355 CALL J. MORRIS. Discuss  
future (2 week) plans for  
TRAVEL to HAYWARD.

Prepare ice chests for  
tomorrow's water  
sampling

TRAIN RT in GE.

1535 Go to glove supplier  
1612 Get gloves  
1628 Go to Copier place  
1645 Go to clothing store to get  
mosquito nets

1712 Out hotel

10.2 hrs

Jan Byrd



DAY 12

79

FRIDAY 22 July 1994

0600

Leave hotel.

Breakfast (0.5 hr)

0652

Get ice

0658

On Base. (B103)

Load truck for water sampling.

0724

Go to Site 21 to set up for

water sampling

0734

At Site 21.

Set up to purge 021-009 MW for sampling

Purge 021-009 MW.

0840

Go to B103 to get vials for

GC analysis.

0900

Back at Site 21.

~~Call Air Products to get~~

~~Address to return air~~

~~box etc.~~

0908

Go to B103 to get more sample bottles

0924

At Site 21.

SAMPLE 021-009 MW

1005

Move to 021-010 MW. Purge

1045

Call Air Products & get Address.

Jack Brinkley  
Jack Brinkley

DAY 13

(81)

23 July 1994

Saturday

Sample 021-010 MW

Purge 021-026 MW

Purged clay. Temp., SpH, and conductivity have not stabilized

Pack-up stuff in truck so that we can break for lunch.

Lunch: (0.8 hrs)

At 0800, to get key to

Site 18 for access over

weekend.

Goto Site 21.

At Site 21. Sample 021-026 MW

Done At 021-026 MW

Purge & sample 021-014 MW

Done w/ P&S at 021-014 MW

leave site 21.

Get ice for samples

At B103.

Pack ice chests

KP-RT go to FEDEX

leave B103

lock up Site 17. It is locked.

At hotel.

}}}}

10.6 hrs

Full Body

0600

leave hotel

Breakfast (0.6 hr)

Get ice

0655 At B103

Pack truck for sampling

Goto Site 17.

Set-up Decon and At B

Hand Auger 017-010 BH 15'-2.5'

Security arrives & questions

our activities. Every thing

OK.

Continue site breakdown.

leave Site 17. Goto Site 18

At Site 18.

Hand Auger both sample locations

Break-down.

KP-RT goto Site 21 to

salient sample.

I goto B103 to set-up GC

and analyze samples

At B103.

Set-up GC & prepare samples.

Make 1 PM & 100 ppb BTEX STDs.

1018

1055

100 ppb BTEX STD.

1.6 VS  $\Rightarrow \frac{1.6 \text{ vs}}{2 \text{ ppb}} = 80 \text{ mVs}$

Set MIP AREA to 100 mVs

Set Library

AIR BLANK.

021-009 MW

• ALL ND's

021-010 MW

• ALL ND's

021-014 MW

• ALL ND's

021-026 MW

• ALL ND's

021-010 MW

• ALL ND's

018-006 BH 2.5' 10g

• ALL ND's

100 ppb BTEX STD.

BENZENE

TOLUENE

E-BENZENE

MP-XYLENE

• Needs new CALIBRATION.

100 ppb BTEX STD.

1.5 VS  $\Rightarrow$  100 mVs setting

AIR BLANK

• ALL ND's

1220

100 ppb BTEX STD.

1.5 VS  $\Rightarrow$  100 mVs setting

AIR BLANK

• ALL ND's

1232

100 ppb BTEX STD.

1.5 VS  $\Rightarrow$  100 mVs setting

AIR BLANK

• ALL ND's

1240

018-006 BH

• ALL ND's

017-010 BH 1.5'-2.5'

• ALL ND's

018-007 BH 2.5'

• ALL ND's

• Something pegged out

chromatogram. Will reshoot

later.

Go to Site 21 to see how

KP-RT ARE doing.

They ARE doing sampling

Swamp. Aid in Site Breakdown.

Go to lunch.

Back from lunch.

Go to B103

At B103

Recalibrate GC.

100 ppb BTEX STD.

1.2 VS  $\Rightarrow$  50 mVs setting

AIR BLANK

• ALL ND's

021-004 SB sediment 10g

• ALL ND's

021-005 SB sediment 10g

• ALL ND's

021-006 SB sediment 10g

• ALL ND's

021-007 SB sediment 10g

• ALL ND's

021-008 SB sediment 10g

• ALL ND's

Sample ID	Sample Description	Sample Weight	Sample Location	Sample Analysis	Sample Results
1614	021-006 SD	10g		ALL ND's	
1624	021-007 SD	12g		ALL ND's	
1634	018-007 BH	10g	0.8'-1.3'	Toluene 7 ppb E-Benzene 215 ppb O-Xylene 1,224 ppb	1,080 ppb 1,080 ppb 1,030 ppb 2,060 ppb 1,910 ppb 10g 30ul shot 5x dilute
1650	Change to 1 PPM BTEx STD.				
1659	1 PPM BTEx STD				
	4.0 Vs → 20 mmV Min Area				
	Setting				
1711	Air Blank				
1721	018-007 BH	10g	0.8'-1.3'	E-Benzene 66 ppb	10g dilute
1732	018-007 BH	10g	2.5'	Toluene 3,551 ppb E-Benzene 3,224 ppb M.P-Xylene 4,043 ppb	1,000 ppb 953 ppb 887 ppb 1760 ppb
1745	1 PPM BTEx STD				

(87)

FILL-UP CAR.

AT HOTEL

Take GC to AP's room

Done for day.

2:00

12.9 hrs

For Byrd

ERASE Library

100 ppb BTX STD

• 1.2 V<sub>s</sub> ⇒ 50 mV's Seeks

Air blank

• ALL ND's

1923 018-007 BH 0.8'-1.3' 10g

• Toluene 10 ppb

• E-Benzene 295 ppb

• O-Xylene 1590 ppb

1937 018-007 BH 0.8'-1.3' 10g ZX dilution

• E-Benzene 166 ppb

• O-Xylene 921 ppb

1948 100 ppb BTX STD

• Benzene 96 ppb

• Toluene 92 ppb

• E-Benzene 91 ppb

• mP-Xylene 179 ppb

• O-Xylene 96 ppb

Air blank

• ALL ND's

SHUT-DOWN GC.

PACK ALL GC equipment.

2025 leave B103

CALC

100 ppb

96 ppb

94 ppb

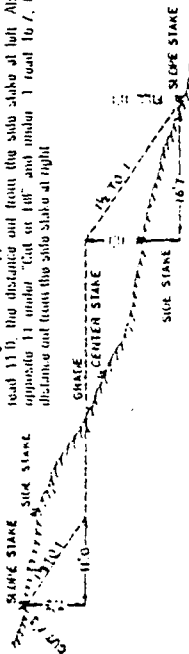
187 ppb

96 ppb

# DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

In the figure below opposite 7 under "Cut or Fill" and under 3 road 11.0, the distance out from the side stake at left "A" is opposite 11 under "Cut or Fill" and under 1 road 11.0, the distance out from the side stake at right.



0	1	2	3	4	5	6	7	8	9	10
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9
2	3.0	3.2	3.5	3.6	3.8	3.9	4.1	4.2	4.4	4.6
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9
4	6.0	6.2	6.4	6.5	6.6	6.8	6.9	7.1	7.2	7.4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4
7	10.5	10.7	10.9	11.0	11.1	11.3	11.4	11.6	11.7	11.9
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4



Name Ruben S. Torres

Address 8235 Korte Rector  
4100 New Loop 410 Ste 230  
 Phone (210) 731-0000

Project Delort AN 63  
July 11- July 28, 1984

"Rite in the Rain" - a unique all-weather writing surface created to shed water and to enhance the written image. Makes it possible to write sharp, legible field data in any kind of weather.

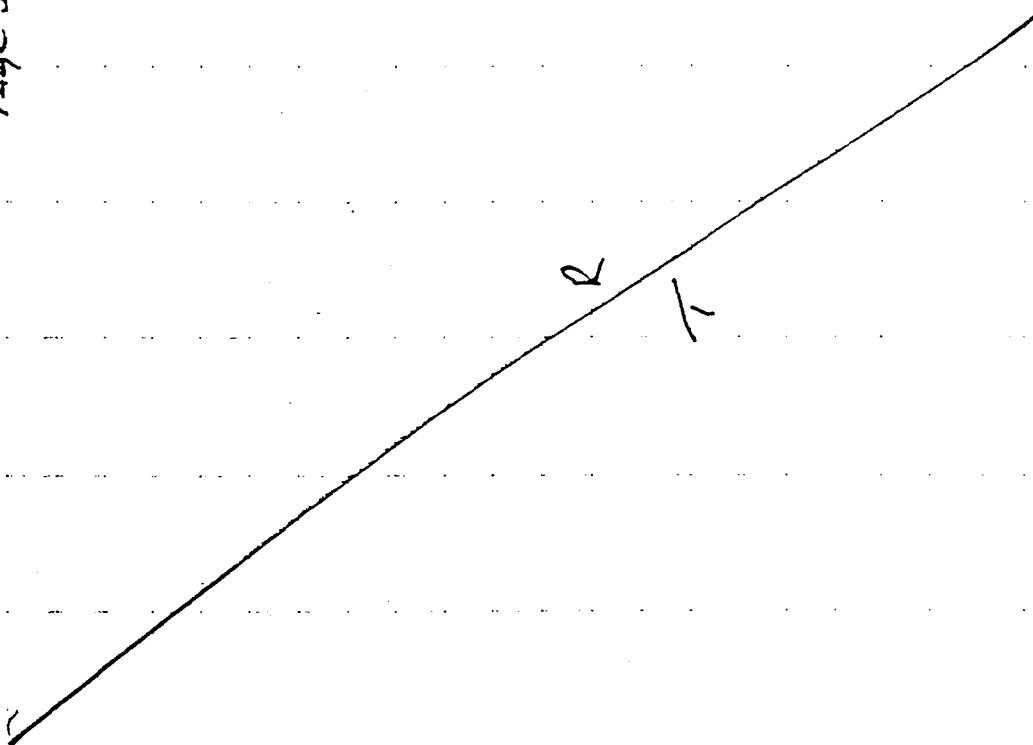
a product of

**J. L. DARLING CORPORATION**  
 TACOMA, WA 98421-3696 USA

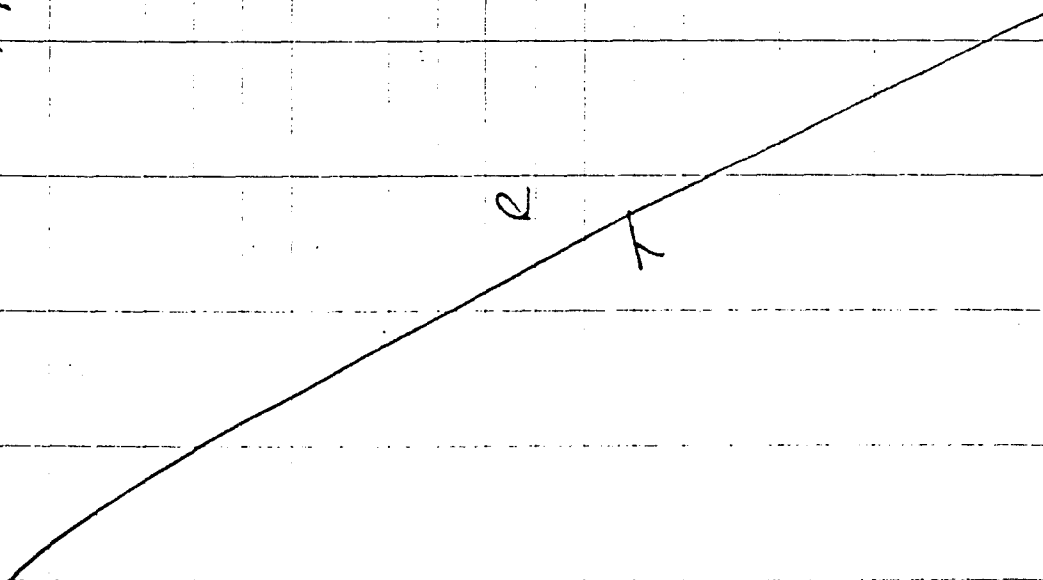
A hand-drawn graph on lined paper. A smooth, upward-sloping curve is drawn, starting from the bottom left and curving towards the top right. The curve is labeled with a handwritten 'R' in the middle. A point on the curve is marked with a small cross, and a vertical line segment is drawn from this point down to the horizontal axis.

[illegible]

Page 3



Page 2





7-12-94

To go

0602 Leave Hotel

Eat Breakfast

0700 Go To Site 21 To Set

Up Decon Area.

0710 Arrive on Site

Weather

Breezy / Warm

Low 60's

High mid 80's

0730 R. Torres + J. Byrd Begin

To Set Up Decon Area

Put The Vioqueen on Tables

+ Tape Them Up.

0815 R. Torres + J. Byrd

was Sees Skeets +

Cap. Huntington

0900 Twin City cleaning

Crew Arrive on Site

7-12-94

Page 6

0930 R. Torres Calibrates  
The LEL MX 251  
SN# 9408279-099  
PENTANE 0.75% C5 H 12

A  
Crew Begins To Break Holes  
021-025 BH  
2 Sights Spl. 750m 1/2 ft. to 2 1/2 ft  
0946 R. Torres, Steve STELL  
Jim Sargestad, R. J. Byrd,  
K. Pritchard, J. Moeck's start safety meeting  
Drilling 12-15 ft  
Steel toe boots, kneepads, vests, ear  
plugs. N

A  
0950 R. Torres checks water level  
13.20 water level  
then decors water level  
men # 21-013 pm

A  
1010 R. Torres decors SPCH spoon.

1050 R. Torres Takes  
P.D. Reading 2.3 ppm breathing  
zone  
LEL 6.9 ppm  
breath

LEL  
OK 20.9%

7-12-94

Page 7

1030 P.D. Reading  
LEL OK 20.9

1150 R. Torres decors spoon

1205 R. Torres Takes P.D. Reading  
LEL Reading 021-023 BH

P.D. Reading Breath 37.5  
Breathing Zone 2.5  
LEL OK 21.0

1230 R. Torres Takes P.D.  
Reading + LEL.

P.D. BH 16.6 Breathing Zone 2.5  
LEL OK 20.9  
LEL 000

1310 R. Torres status of  
new decors Allen

1430 R. Torres decors  
BRASS sleeves

7-12-94

1503 R. Torres decons Beas  
Sleeves / SpCJ Sporn.

1531 R. Torres Takes P.d Reading

021-022  
BH

P.d Breathing zone 2.1 ppm  
Bole Bole 13.9 ppm

LeL 000

OX 20.9% R

1549 R. Torres decons SpCJ

Sporn

1625 R. Torres decons Beas  
Sleeves and clamps decon  
area get ready for  
tomorrow.

1700 work is done for the  
day.

1721 Go to hangar 103 + put ice  
on the engines

1745 Go to Federal Express

John A. Jones

7-13-94

0600 Capt. Hotel To go eat  
Breakfast R

Weather T  
partly cloudy  
COC R

Low T  
50's  
High Low 40's

0702 Arrive on site 21  
Begin to get up decon area

0730 J. Byrd Conducts SpCJ  
Meeting R

0743 Decon crew begins to  
deall R

0941 R. Torres Takes P.d  
Reading + LeL R

P.d Reading Breathing zone 2.5 ppm  
LeL 000  
OX 20.9  
Bole 1.8



R. Torrey  
7-14-94

0600 Leave Hotel

0905 Arrive at Site 21

Begin to set up decap

Area

R

T

0730 Calibrate P.D. SN # 48961-182

P.D. was calibrated using proper method on 7-12-94

and 7-13-94. R

T

Calibrated LEL SN # 9405279.044

0736 weather

Rainy and Cool

High 60's

Low 50's

R

T

Pulling down sleeves on site.

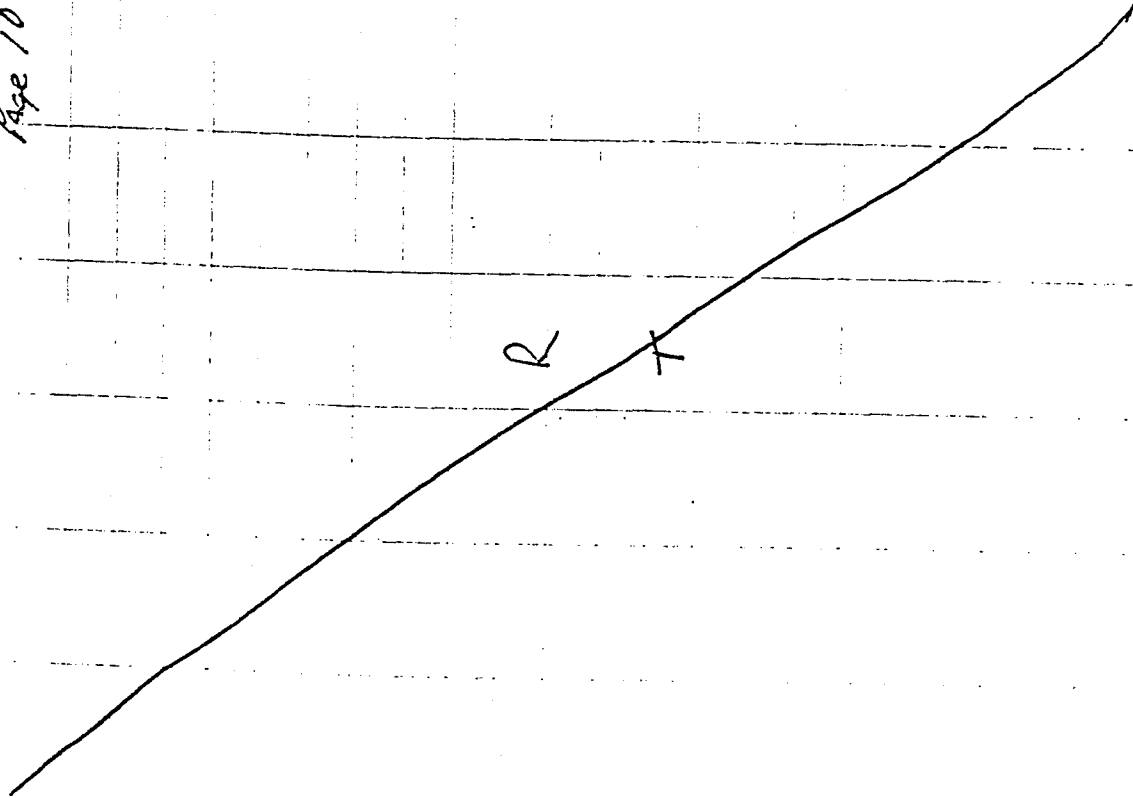
0745 Leggett and Freese meeting  
J. Byrd, R. Tades, K. T. Ford

R

T

R

T



Page 12

0857 7-14-94 R. TOPLOS TAKES

1.8 Breathing Zone

Breath. 1.5

CEL 000 OK 20.9%

1210-1215 Decom Activities Continue

1023 R. TOPLOS TAKES  
Breathing Zone + CEL

Breathing Zone 1.2  
CEL 000 OK 20.9%

1055 Decom Activities going on.

1116 TAKING Breathing Zone AND  
CEL

CEL 000 OK 20.9%

Breathing Zone 1.6

1142 Decomming BRASS SCUBES

+ Split Spool

Breaking Down for lunch

1235 went to lunch

Page 13

7-14-94

1402 ARRIVE AT SITE 21

1428 Decom Activities going on

1518 TAKE Breathing Zone 1.6

OK 20.9

CEL 000

1605 Begin to Break down

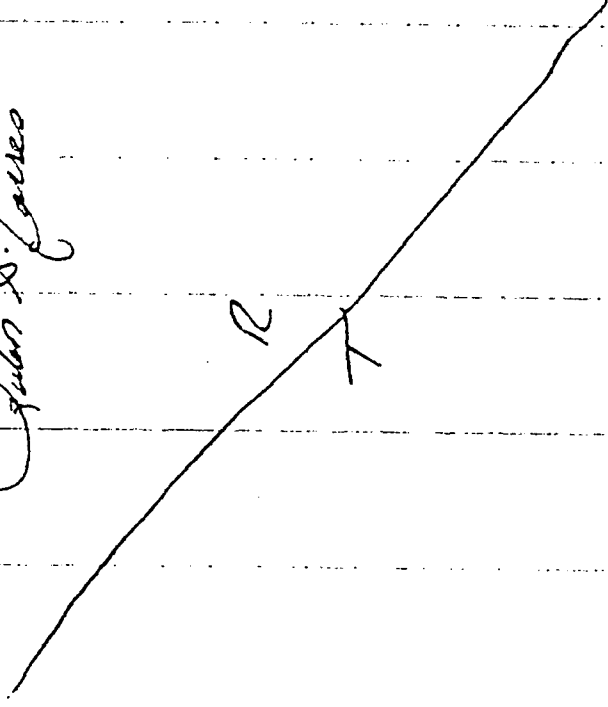
Decom Area

1649 LABEL DECOM BRASS

1726 GO TO FEDERAL EXPRESS

1750 GO TO HOTEL

John S. Jones



R. Tollos  
7-15-94

Page 14

0600 Leave Hotel

0710 Arrive on site #21

Set up Decon Area

Calibrated P.D. SNH

Model Determinator

Lot # 408302-412503-48

ISO Surv Lene 100 ppm

Calibrated LEL Industrial Scientific

Lot # 4403279-0941046L Mx251

OK 20.9%

0811 Have Safety and Health  
Meeting.

0840 Decon Activities going  
on.

0921 Take Breathing Zone with  
P.D. .5

LEL 000 OX 20.9%

0943 Decon Activities going  
on.

1020 Decon Brass Shovel

Decon Cap 2.

1120 Take P.D. Breathing Zone

and LEL Readings

Breathing Zone .8

LEL 000

OX 20.9%

Page 15

R. Torres  
7-15-94

1207 Dr.illers Begin construction  
of well.

1303 Take Breathing Zone + LEL.  
Breathing Zone .8

LEL 000. OZ 20.9%  
Break For Lunch.

1403 Return To Site 21

Clean Up Decon Area and  
move Equipmt To Hangar 103.

1556 Arrive at Hangar

1614 Do Rinse at Blanks.

1648 Go To Fed Ex To

Deliver Samples

Quinn L. Jordan

R. Torres

7-18-94 Page 17

0600 Leave Hotel

0650 Arrive at Hangar 103.

0715 Begin To Cage Up

Truck

0735 Calibrated P.d SN# 48961-282

Hotel Determinative Environment 42

Intermittent

LOT # 408302-412503-48

LEL SN# 9403279-099

0816 SET Up Decon Area on

Site # 17

0910 Decon Brass Sleeves and  
Caps.

weather

Warm / Partly Cloudy

High mid 70's

Low Low 60's.

1034 Take LEL and Breathing  
Zone

Breathing Zone .6

LEL 000 OX 20.9%

1116 Decon Activities going

on

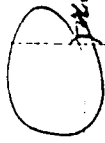
1236 Take Lunch Break.



R. Torres

7-18-94

- 1314 SHOT DOWN DOWNPOUR OF  
RAIN AND LIGHTENING.  
1528 STOP WORKING. CHAIN UP CLEAN  
AREA + GO TO HANGAR  
1614 UNLOAD TRUCK INTO HANGAR  
DO EQUIPMENT REINSTATES.  
1715 GO TO FUEL EX AND OILCANS  
SAMPLES.  
1731 G. TO HANGAR.

 R. Torres

Page 18

R. Torres

7-19-94

Page 19

- 0600 LEAVE HOTEL  
0658 ARRIVE AT HANGAR 103  
BEGIN TO LOAD UP TRUCK  
WEATHER  
RAINY AND COOL  
LOW MID 50'S  
HIGH HIGH 60'S  
0734 FINISHED LOADING UP THE  
TRUCK  
0738 ARRIVE ON SITE # 17  
0750 ATTEND SAFETY AND HEALTH  
MEETING CAL-BATED P. 4 LEL  
0932 RECON ACTIVITIES GOING  
ON  
0920 TAKE BREATHING ZONE AND  
LEL.  
LEL 0000 OX 20.9%  
BREATHING ZONE .6  
1002 RECON ACTIVITIES GOING  
ON  
1048 TAKE LEL + BREATHING ZONE  
OX 20.9%  
LEL 000.  
BREATHING ZONE : 3

7-19-94

Page 20

1110 Begin To Rest down  
Decan Area.  
Drillers are decommissioning their  
Augers.  
1130 Go To Hangar 103  
1210 Go To Cunch  
1300 Arrive AT Site 17  
Begin To Sort up Decan  
1330 Begin Decan Activities  
1348 Take Breathing Zone and  
LeL  
Breathing Zone .60  
LEL 000 OK 20.5%  
1410 Decan Activities getting  
on  
1506 Shut down for the  
day.  
1518 Begin To Rest down near  
The Jay.  
1546 Leave Site # 17  
To go To Hangar 103.  
1610 Do RINSE ATTES  
1705 Go To FED EX

12. 1000000

Page 21

7-19-94

1751 Go To Hotel

Richard H. Jones

R  
T

K. Torres

7-20-94

Page 22

0600 Leave Hotel

0658 Arrive at Site # 21

HW 021-026

Weather Rety Cloudy

Low 50's

High Mid 70's

0715 Calibrate P.d and

CEL / AMX / D.D Reading 0.00

Decom Bailler

0812 Time Started Bailing

Gallons Removed

1.6

Temp ph Corr

63.6 5.66 596

WL 7.92 FT

BH Total depth 20.23 ft

Volume = (0.0408) (2.31) (12.31)

Well = 294 Gallons

Cloudy

Cloudy

0915 Decom Bailler and Rope

0931 Leave Site 021 well

Bailed Dry

K. Torres

7-20-94

Page 23

1018 Decom Activities going on

and set up decom pad

1048 Decom Activities going on

1125 Take Breathing Zone

and CEL

Breathing Zone 20.8% O<sub>2</sub>

CEL 000 O<sub>2</sub> 20.8%

1143 Decom Activities going on

on

1230 Go to Lunch

1313 Arrive on Site 17

1323 Decom Activities going on

1345 Take Breathing Zone

and CEL

Breathing Zone - O

CEL 000 O<sub>2</sub> 20.9%

1406 Decom Activities going on

1435 Take Breathing Zone and

CEL Reading

Breathing Zone - O

CEL 000 O<sub>2</sub> 20.9%

1444 Decom Activities going on

on

R. Torres

17-20: 94

Page 24

1536 Begin To Pack down  
Decom Areas and put things  
in the truck

1549 Put ~~into~~ RT Do Riverettes  
Samples.

1628 Begin To Double bag  
ice and put them in ice  
chest.

1720 Go To FEO EX  
1748 Go To HOTEL

John S. Torres

R

T

R. Torres

7-21: 94

Page 25

0630 Leave Hotel

0800 Arrive AT ~~AT~~ SITE #17  
and meet SUR.

0831 Arrive AT SITE #18

0840 Begin To Set Up Decom  
Area

0900 Decom Activities going on  
Put Begos sleeves, Caps, Auger,  
and T in ALCONOX then  
put it in Rinse water,  
Put Di water, then methanol  
and let them dry.

Low

Low 50's

High

Low 70's

Rainy and mostly cloudy

0918 Calibrated p.d.

1030 Rainy weather. Beke

down Decom Set up.

1048 Go To Hanga

Leave for Hotel

1318 Go to Alonding Ton

and pick up Di water.

1416 Arrive at Hanga 103

R. Torres

7-21-94

1421 Prepare

Staples

1538 Leave

Go and buy Supplies

Page 26

Bottles for water

Leave 103 and

Steven L. Torres

R. Torres

7-22-94

0600 Leave Hotel

0658 Arrive AT Haysak 103

0738 Begin To Set Up Rebar

Area AT SITE 21

0746 Cal. beater P.D

0758 Took Reading FROM MW 021-

009

0815 Start Paving MW 021-009

0821 Start Taking ph level

Con. Temp.

0948 Take water level measure -

most and Total Depth

1037 Take Temp. Con. & Ph

level readings.

weather

Partly Cloudy

High mid 70's

Low mid 50's

Chance of Showers.

1116 Take P.D Reading of MW

0.00

1205 Take ph, Con. Temp readings

1300 Stop Paving

1301 Go To Lunch

N. 1, 00000

7-23-54

1422 Arrive at Site # 17 T.

1437 Get Key for Site 18

Arrive at Site 21

Take water samples.

1510 Take 1st Reading of NW 021-014

Reading 0.00

Take water level and

water Depth.

1546 Take ph. Con. Temp of

burying well

1612 Take water samples

1649 Begin to Load up Decon

Area.

1703 Leave Site 021 and go to

camp. 103

1718 Double Bag Ice

1739 to deliver samples to

Express.

K. TORRES

7-23-54

0600 Leave Hotel

0658 Arrive at Airport 103  
Begin to Load up Truck  
with Supplies  
Weather

Low Low SW's

High Mid 70's

Partly Sunny

0726 Arrive at Site 48 or 17

0743 Begin to Set up Decon

Area

0809 Decon Auger

0815 Leave Site 48 or 17

0830 Arrive on Site 18

0844 Begin to Set up Decon

Area

0901 Decon Activities going on

0948 Begin to Break down Decon

Area

1001 Leave Site 18

1021 Arrive on Site 21

1031 Begin to Set up Decon

Area

1118 Begin Taking Sediment

Samples.

R. Torres

7-23-94

1318 Finished Sampling.

1331 started to pack supplies in truck

1340 Go to lunch

1526 Arrive at Haysak 103

1535 Begin to unload supplies at the Haysak

1556 Double bag ice

1630 Go to feed Ex and deliver

Supplies

1649 Go back to Haysak 103

1853 Go to K5721

*Ruben S. Torres*

R. Torres ET

7-24-94 17-25-94

0620 Leave Hotel

weathered

low 50's

High mid 60's

Breezy

0720 Arrive AT Haysak 103

Begin to load and package

Supplies to be shipped out.

0823 leave Haysak 103

0831 Arrive AT Site 21

0938 Begin to unload supplies

0850 Recon Activities going on

0930 Begin to Package

1028 Packaging Activities going on

DN

1146 Take water levels

1206 Put Supplies in Truck

1220 Go to lunch

1308 Arrive AT Site 21

1349 Go to Site 18

1358 Arrive AT Site 18

1404 Take water levels & Total

Depth.

1435 Do Pinsetttes and Field

Books.

R. TORRES  
7-23-54

1508 Leave Site 18

1527 Arrive AT SITE 17 and  
do water checks

1616 Leave Camp 103 To go  
drop off 4.11 bottles AT  
building 2410.

1718 Go To Camp 103 and load  
up Aqual and Big box and  
Ice Chest.

1739 Go To feed box To  
Drop off Ice Chest and  
Equipment going to Nazco.

1817 Go To Camp To move table  
and clean up.

1846 Go To Hotel

Robert S. Lewis

R. TORRES  
7-26-54

1415 Arrive AT SITE 21 To  
dispose of soil samples in  
55 gal. drums.

1511 Take water leave/s AT  
SITE 21

1542 Arrive AT SITE 17.  
Label Barrels and dispose  
of soil samples

1611 Leave SITE 17. Lock the  
gate

1613 Arrive AT Camp 103  
and clean up site

1619 Leave Camp 103.

1628 Arrive SITE 21 and  
take p. CTXOS.

1640 Leave SITE 21

1642 Arrive AT Airport.

Robert S. Lewis



Federal Express  
1342-648661



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Address

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Project

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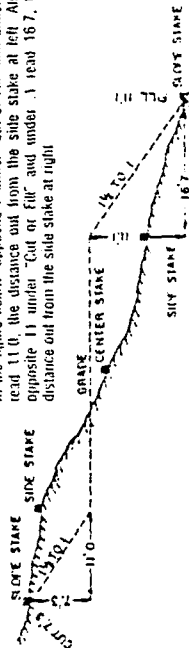
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# DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

In the figure below, opposite 7 under "Cut or Fill" and under 3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under 3 read 16.7, the distance out from the side stake at right.



Distance out from Side or Shoulder Stake											Cut or Fill	
0	1	2	3	4	5	6	7	8	9	10	11	12
0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	1.6	1.8	2.0
1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	3.1	3.3	3.5
3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	4.6	4.8	5.0
4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	6.1	6.3	6.5
6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	7.6	7.8	8.0
7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	9.1	9.3	9.5
9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	10.6	10.8	11.0
10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	12.1	12.3	12.5
12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	13.6	13.8	14.0
13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	15.1	15.3	15.5
15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	16.6	16.8	17.0
16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	18.1	18.3	18.5
18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	19.6	19.8	20.0
19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	21.1	21.3	21.5
21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	22.6	22.8	23.0
22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	24.1	24.3	24.5
24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	25.6	25.8	26.0
25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	27.1	27.3	27.5
27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	28.6	28.8	29.0
28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	30.1	30.3	30.5
30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	31.6	31.8	32.0
31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	33.1	33.3	33.5
33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	34.6	34.8	35.0
34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	36.1	36.3	36.5
36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	37.6	37.8	38.0
37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	39.1	39.3	39.5
39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	40.6	40.8	41.0
40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	42.1	42.3	42.5
42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	43.6	43.8	44.0
43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	45.1	45.3	45.5
45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	46.6	46.8	47.0
46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	48.1	48.3	48.5
48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	49.6	49.8	50.0
49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	51.1	51.3	51.5
51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	52.6	52.8	53.0
52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	54.1	54.3	54.5
54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	55.6	55.8	56.0
55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	57.1	57.3	57.5
57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	58.6	58.8	59.0
58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	60.1	60.3	60.5
60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	61.6	61.8	62.0



45	11/4/94	Arrived at Huntington Engineering and Environment to pick up the following shipped from the official San Antonio office: - hand-drawn map - human services; - public copy; - 1000 note books; and - new digital computer, acquired with 1 of petroleum grade methanol and three 55-gallon drums were delivered to site 21 at 11:00. ~160000	1010	10/4/94	Deposited from EXP-62 (7) boxes: (2) boxes P.I.D. & water level indicator (also Hydro) from CE. (4) boxes lectern & sample bottles from SP (1) box for Huntington. F & E Called John Morris (CPT-14) to give status of Dubach project. Called Paul Wheeler (ANLGR) to provide status of Dubach project → left message on voice mail. Picked up keys to Hanger 103 from Capt. Steven Wahrnity. Gave him pass paper number 1131115. Arrived at Hanger 103 to unload supplies. Arrived at DPMO Bldg. to pick up keys to gate at 1500 from Sue Ewy. Picked Kathryn Pickett
115	11/5	Arrived at Dubach (1000) the National Guard (1000) meet Capt. Steven Wahrnity and to pick up orders and work orders. I will check on keys to Hanger 103. Deposited Buzza to check on shipment at Federal Express. Kathryn Pickett	1100	11/5	11/5



10/4/94

Deposited Site 11  
Recompacted bedrock

- 021-0065D2
- 021-0055D2
- 021-001A5D1
- 021-0015D2
- 021-0045D2

m/mSD

to 1.0000 1.0000 to  
ship to SCL  
in Billings 0912896493

GA/46  
Sample

Returned to Best Western  
Downtown Hotel

*[Signature]*

X Kelly Patrick

10/5/94

Wednesday

Weather: cloudy, sun, calm  
winds

Made numerous calls  
John Pearson for status;  
Sharon Wyatt to call;

ABF Freight System to  
arrange shipment from  
Greene to San Antonio to

Billy Mitchell or Salt  
Lake City; Pat Hollenbeck  
about project reports;

Northwest on flight  
arrangements for Steve  
Wilson about mobile  
phone problem;

Departed Best Western  
Hotel - Kathryn Patrick  
OPTECH & Jeff Blunt

Arrived at VORC, NC  
Bldg. to inform Jim  
Casey that we were coming

will be collecting soil  
samples from Site 11  
Arrived at Hanger 103 to  
pick up supplies.

Kathy Patrick

115  
125

115

12/14

Quoted at Washington  
improving a long  
in common with the  
of the people's  
distance will not be  
opposed with any  
available money they  
will soon it later the  
with.

involved at	David H. Allen
presented	Conrad Allen & Sons
to	Allen & Sons
from	Allen & Sons
presented	Allen & Sons

[illegible]

2007

changed at July '88  
at Lithy Head  
Blunt

Kathy Metzler

10/5/94

Collected equipment	10/21 - R307
excess from station	Collected 10/21/78
Steel drums and	14 pp. 10/21/78
parachute equipment	UUC 10/21/78

200 ft	little	and
100 ft	little	trace
100 ft	trace	gravel
100 ft	trace	(240 ft)

roots	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 8
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1.7	Same as 0-0.1	
	collected 0/2 - 0.1/2 -	
1.8	1.7 - 2.1	up 13
	208	40/70
	collected	0/2 - 0.1/2

VOC (w/840/14)	3.1.20
we. Kals.	Paßdorf

1

1945/1946

(ii)

United States - 17-06-2008

Deposited with 18

[illegible]

to complete collection.  
called 502 lab. to  
clear away what remains.

[illegible]

→ samples were logged in system.

1. Not equal, not  
 2. Not equal, not

reimbursement required  
written samples to  
Federal Express to  
date 1/28/1970

[illegible]

We might  
 Ourself No:

(60) (90, 270 / 180)

0912402  
1.2-7.1-2111700-810  
1.1-1.2111700-310  
0180071312-1.7-2

[illegible]

71-1-210900-3/0  
51-2-248900-3/0  
51-2-210900-3/0

received of the  
 of the  
 of the

018 - 006342 - 2.1-2.5  
018 - K82  
021 - R52

with a lot of samples  
acquired with 10 samples  
and at 500 / 8

<p>             1              2              3              4              5              6              7              8              9              10              11              12              13              14              15              16              17              18              19              20              21              22              23              24              25              26              27              28              29              30              31              32              33              34              35              36              37              38              39              40              41              42              43              44              45              46              47              48              49              50              51              52              53              54              55              56              57              58              59              60              61              62              63              64              65              66              67              68              69              70              71              72              73              74              75              76              77              78              79              80              81              82              83              84              85              86              87              88              89              90              91              92              93              94              95              96              97              98              99              100              101              102              103              104              105              106              107              108              109              110              111              112              113              114              115              116              117              118              119              120              121              122              123              124              125              126              127              128              129              130              131              132              133              134              135              136              137              138              139              140              141              142              143              144              145              146              147              148              149              150              151              152              153              154              155              156              157              158              159              160              161              162              163              164              165              166              167              168              169              170              171              172              173              174              175              176              177              178              179              180              181              182              183              184              185              186              187              188              189              190              191              192              193              194              195              196              197              198              199              200              201              202              203              204              205              206              207              208              209              210              211              212              213              214              215              216              217              218              219              220              221              222              223              224              225              226              227              228              229              230              231              232              233              234              235              236              237              238              239              240              241              242              243              244              245              246              247              248              249              250              251              252              253              254              255              256              257              258              259              260              261              262              263              264              265              266              267              268              269              270              271              272              273              274              275              276              277              278              279              280              281              282              283              284              285              286              287              288              289              290              291              292              293              294              295              296              297              298              299              300              301              302              303              304              305              306              307              308              309              310              311              312              313              314              315              316              317              318              319              320              321              322              323              324              325              326              327              328              329              330              331              332              333              334              335              336              337              338              339              340              341              342              343              344              345              346              347              348              349              350              351              352              353              354              355              356              357              358              359              360              361              362              363              364              365              366              367              368              369              370              371              372              373              374              375              376              377              378              379              380              381              382              383              384              385              386              387              388              389              390              391              392              393              394              395              396              397              398              399              400              401              402              403              404              405              406              407              408              409              410              411              412              413              414              415              416              417              418              419              420              421              422              423              424              425              426              427              428              429              430              431              432              433              434              435              436              437              438              439              440              441              442              443              444              445              446              447              448              449              450              451              452              453              454              455              456              457              458              459              460              461              462              463              464              465              466              467              468              469              470              471              472              473              474              475              476              477              478              479              480              481              482              483              484              485              486              487              488              489              490              491              492              493              494              495              496              497              498              499              500              501              502              503              504              505              506              507              508              509              510              511              512              513              514              515              516              517              518              519              520              521              522              523              524</p>
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1. 200	0/0 1800
	1. 200

Kathy Anderson

62	Thursday	10/6/94	10/6/94	(12)
600	Arrived at hotel, 12:30, 1st floor	about evening, 10:00 and 11:00 time	no problems about receiving - the new page	
7-20	Hotel, 12:30, 1st floor	no problems about receiving - the new page	re if there are any otherwise, Pauli called her tomorrow. She will have the data report to me by 17 October 1994	
7-25	Arrived at site 17	Arrived at Site 21	Kathryn Patrick Jeff Hunt	
7-45	to collect samples at 017 - 018 1st floor	to prepare for ground water samples	Calibrated OLM Model C	
7-55	Collected samples at 017 - 018 1st floor	580 B Serial #1	580 B	
8-05	Collected samples at 017 - 018 1st floor	580 B - 30480-279	100 ppm Perbactam	
8-15	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
8-25	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
8-35	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
8-45	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
8-55	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
9-05	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
9-15	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
9-25	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
9-35	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
9-45	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
9-55	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
10-05	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
10-15	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
10-25	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
10-35	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
10-45	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
10-55	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
11-05	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
11-15	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
11-25	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
11-35	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
11-45	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
11-55	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
12-05	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
12-15	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
12-25	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
12-35	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
12-45	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	
12-55	Collected samples at 017 - 018 1st floor	100 ppm Perbactam	100 ppm Perbactam	



10/6/94

- Decontaminated 7  
7 after in battery by  
procedures stated on  
page 4 of the field  
book.  
- Decontaminated water  
used in per procedures  
stated on page 4 of  
the field book.  
Calculated 14 Dec  
Sewer # 9/1107  
conductivity low  
152 3167

Lot # 9/1E 12701  
Linea P17 W 210 lot #  
10410 XU 19  
221-241, and location  
(BTO PC)  
W.L. 1151  
T.D. 1989"  
W 8.33  
V<sub>add</sub> (8.33) (0.16) = 1.4 gal  
V<sub>15</sub> 4.1 gallons  
are a mercury thermometer  
for temperature measurement  
X inches of water

(15)

Time 1002  
1012  
1017  
1022  
1040  
(3) 40-ne vid  
H2O  
QZ1 - 01/9 MUD  
location  
PID 0 ppm  
Background 8 ppm  
W.L. 4.83' (BTO PC)  
T.D. 14.79' " 21' Tiller  
- water - level indicated by  
decontaminated pump house or  
per procedures stated in page  
4 of the field book.  
QZ1 = 9.96'  
V<sub>add</sub> (9.96') (0.163) = 1.6 gal  
V<sub>15</sub> 4.9 gal  
Kodex P-1100

Pumping started 955  
Cable 4  
5.5  
6.5  
7.8  
Pumped any - stopped  
Pumping collected 21 - 69 med -  
Cable 2  
W.L. (SW 240 / T.C.)  
H2O Temp. 12.5  
QZ1 - 01/9 MUD  
location  
PID 0 ppm  
Background 8 ppm  
W.L. 4.83' (BTO PC)  
T.D. 14.79' " 21' Tiller  
- water - level indicated by  
decontaminated pump house or  
per procedures stated in page  
4 of the field book.  
QZ1 = 9.96'  
V<sub>add</sub> (9.96') (0.163) = 1.6 gal  
V<sub>15</sub> 4.9 gal  
Kodex P-1100

Time	Start	Temp	Cond	Clarity	Notes
1300	1345	14.5	5.00	cloudy	10/16/94
1315	1351	14.0	6.5	cloudy	
1355	1400	13.5	8.0	cloudy	
1400	1405	13.5	9.5	cloudy	
1405	1410	13.0	11.0	cloudy	
1410	1415	13.5	12.5	cloudy	
1415	1420	13.0	14.0	cloudy	
1420	1425	13.5	15.5	cloudy	
1425	1430	14.0	17.0	cloudy	
1430	1435	14.5	18.5	cloudy	
1435	1440	15.0	20.0	cloudy	
1440	1445	15.5	21.5	cloudy	
1445	1450	16.0	23.0	cloudy	
1450	1455	16.5	24.5	cloudy	
1455	1500	17.0	26.0	cloudy	
1500	1505	17.5	27.5	cloudy	
1505	1510	18.0	29.0	cloudy	
1510	1515	18.5	30.5	cloudy	
1515	1520	19.0	32.0	cloudy	
1520	1525	19.5	33.5	cloudy	
1525	1530	20.0	35.0	cloudy	
1530	1535	20.5	36.5	cloudy	
1535	1540	21.0	38.0	cloudy	
1540	1545	21.5	39.5	cloudy	
1545	1550	22.0	41.0	cloudy	
1550	1555	22.5	42.5	cloudy	
1555	1600	23.0	44.0	cloudy	
1600	1605	23.5	45.5	cloudy	
1605	1610	24.0	47.0	cloudy	
1610	1615	24.5	48.5	cloudy	
1615	1620	25.0	50.0	cloudy	
1620	1625	25.5	51.5	cloudy	
1625	1630	26.0	53.0	cloudy	
1630	1635	26.5	54.5	cloudy	
1635	1640	27.0	56.0	cloudy	
1640	1645	27.5	57.5	cloudy	
1645	1650	28.0	59.0	cloudy	
1650	1655	28.5	60.5	cloudy	
1655	1700	29.0	62.0	cloudy	
1700	1705	29.5	63.5	cloudy	
1705	1710	30.0	65.0	cloudy	
1710	1715	30.5	66.5	cloudy	
1715	1720	31.0	68.0	cloudy	
1720	1725	31.5	69.5	cloudy	
1725	1730	32.0	71.0	cloudy	
1730	1735	32.5	72.5	cloudy	
1735	1740	33.0	74.0	cloudy	
1740	1745	33.5	75.5	cloudy	
1745	1750	34.0	77.0	cloudy	
1750	1755	34.5	78.5	cloudy	
1755	1800	35.0	80.0	cloudy	
1800	1805	35.5	81.5	cloudy	
1805	1810	36.0	83.0	cloudy	
1810	1815	36.5	84.5	cloudy	
1815	1820	37.0	86.0	cloudy	
1820	1825	37.5	87.5	cloudy	
1825	1830	38.0	89.0	cloudy	
1830	1835	38.5	90.5	cloudy	
1835	1840	39.0	92.0	cloudy	
1840	1845	39.5	93.5	cloudy	
1845	1850	40.0	95.0	cloudy	
1850	1855	40.5	96.5	cloudy	
1855	1900	41.0	98.0	cloudy	
1900	1905	41.5	99.5	cloudy	
1905	1910	42.0	101.0	cloudy	
1910	1915	42.5	102.5	cloudy	
1915	1920	43.0	104.0	cloudy	

	Started	Temp.	Card	purging	10/6/91	(11)
1330						
Time	Grabs				pH	clarity
1345	5.00	14.5	1046		6.65	clear, grey-blue
1351	6.5	14.0	1002		6.71	grey
1355	8.0	13.5	906		6.81	clear, grey-blue
1400	9.5	13.5	788		7.06	clear, brownish
1405	11.0	13.0	778		7.15	clear, brown
1410	Purging	14	790	bailed	7.15	clarity
→	Stopped			purging		
1425	Collected		021			clarity
	(13) 14.0	14.0	14.0			clarity
1430	Collected		021-010A	duplicate		
	Temp. 14.5					
	pH 7.15					
	021-026					
	Temp. 14.5					
	pH 7.15					
	021-026					
	P.D. 0.00					
	Back ground					
1415	W.C.	7.65	(15.00)			
	T.D.	20.38				
	h = 12.73					
	V <sub>well</sub> = (12.73) (0.165) =					
	V <sub>well</sub> x 3 = 6.2 gallons					
	Kathy					

10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94
10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94
10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94
10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94
10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94
10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94
10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94
10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94
10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94
10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94
10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94
10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94	10/6/94

Collected field blank  
from portable water  
DAN 615 - F 801  
WOC (SW 8240 / TEL)  
SWOC (SW 8270 / TEL)  
Rest (SW 8280 / TEL)  
TPH (USE EPA 918.1)  
Returned to Hanger  
to complete WOC from  
ind to pack sample  
for shipment  
shipped to 17L  
via Federal Express  
in Bill No: 691317111  
017 - 010 5112 - 015 - 10  
021 - 009 MW - 0202  
021 - 014 MW - 0202  
021 - 010 MW - 0202  
021 - 026 MW - 0201  
021 - 0805  
DAN 666 - F 801  
DAN 666 - F 801  
Trip blank  
Kathy Packerett

1822 Today July 1947

100 Departed Dept of Commerce  
Hotel for DAVCOB  
and airport.

110 Arrived at DAVCOB  
to deliver key  
to change no. 1

120 Capt. Shoen testimony  
and to drop off  
shipment at shipping  
department at base.

130 Arrived at airport for  
flight to San Francisco, TX.

July, 1947

Kathryn Rickett

Black 57  
1317 1977

12

5/1/95

1430 Dined at Base Camp.  
Talked to Capt. Ketch  
and medic. at 2:00

1440 Joe Byrd, Jr. at  
Dusty Canyon  
arrived at Duluth

1445-  
1445 Staked soil being  
and motor well continue

1630 Dept Duluth A.N.G.B.

Kathryn Fitchett

3

Tuesday 5/2/95

715 Depart Hotel  
730 Breakfast and  
morning meeting

830 Arrived at Duluth A.N.G.B.  
Kathleen Morris

Joe Byrd, Jr.  
Dusty Canyon  
Kathryn Fitchett

840 Stopped by Base Camp  
Engineer - Bruce King  
in a meeting until 10:15,  
arrived at headquarters

to meet Capt. Steve  
Waters to obtain  
key for Bldg. 247  
Phone call. 10-

Optical office to acquire  
archival # for box  
sent out Friday from  
office. The file

(Lloys + forms, etc.)  
did not arrive at  
the hotel.

Box did not leave the  
office until ~ noon  
yesterday.

K. Kathryn Fitchett

(4)

5/2/95

Airbill # 5344.094/103

all orders - should

arrive at 900 today

Shaded Sun 21

021-026811

021-027811

021-026811

marked station for

depos 20 & 17

Arrived at Site 20

for Byrd, Jr.

Patricia Maine

Dorothy Conway

Kathryn Pittell

Bruce Berg

Finished stacking off Site 16

Put up supplies

Lunch

Returned to Delitch

ANCO

Called American Engineering

Trinity (Diller)

Left message

~~Kathryn Pittell~~

Kathryn Pittell

5/2/95

(5)

Called Beth Garry

(MPCA) to discuss

the following:

the criteria for TPH

for Sites 17 & 21

to 100 ppm

she will check

with Luke (QA/QC)

about the Wisconsin

C-60/D-80 method

for 1711

Walked over Sites 21 &

21 with Bruce Berg

Called ~~Patricia~~ <sup>Patricia</sup>

Made Escobar (Optech)

to confirm that the

contact for the geotechnical

lab is in place at the

contact person is Joe

Palo (215) 741-4290

Called Dillers to

confirm meeting at

the base by 7:30.

Kathleen Meunier &

Kathryn arrived at Site 17

to place backhoe locations

Kathryn Pittell

(6)

5/2/95

1625 Left Site 17  
1640 Arrived at Duluth  
ANGB.  
700 Left Duluth ANGB.

Wednesday 5/3/95

645 Arrived at Duluth  
ANGB

Kathleen Morrison  
Dorothy Greenway  
Joe Boyd, Jr.  
Kathryn Pittman

Weather: Cloudy, Temp: low  
402-502  
700 Check with Bruce

Ray (Base Civil  
Engineer) about  
clearance for Site 26  
all clear except  
26 - dig out needed to  
be moved due to utilities.

705 Called <sup>and</sup> ~~Wittman~~ Authority  
talked to Rudy Wittman;  
inform them of our presence  
project at Site 26 - we  
should be drilling at Site  
26 from 3 May - 5 May  
1995!

719 Calibrated PIDs;  
Determinator

19961-222  
19962-222

Kathryn Pittman



5/3/95

Decontamination 100 gpm  
lost #40 8307-417503-40  
no documented instruments co.  
Expirometer - Industrial  
Scientific MX251  
910/059-cv2

Imperial Engineering Testing  
Jamie Tuura  
Gary Mantay  
Jonathan Gabrielle

Arrived on site  
Duller setting up  
to decontaminate  
ditching and augers  
on side south of

Blk 246  
Kathleen  
means will document  
decontamination procedures  
of drill rig and augers  
drilled at Headquarters  
to taken to Capt.

waterway at site dunes.  
The 21 dunes that were  
available are being used.  
~ 12 dunes are available  
near site 247.

Kathleen Gabrielle

5/3/95 (9)

Duller finished  
decontaminating drill  
rig and augers.  
Blanch

Arrived at Site 26  
Health & Safety  
Meeting

Jamie Tuura  
Gary Mantay  
Jonathan Gabrielle  
Kathleen Means

Ditching Greenway  
Bl. 246 Dr.

Kathleen Gabrielle

Started 026-026011  
Collected 025-2.5'  
Encountered boulder.

at 3.5' BL5-moved 1.5'  
0 LEL 70.2% O<sub>2</sub>  
South

0 LEL 20.9% O<sub>2</sub>

0 ppm  
Collected 5-7' Anterior

0 ppm  
Kathleen Gabrielle

955

1045-

1125

1200

1215-

1225

1240

1250

1255

BL6 PLD

1252 Boulder

1300

5/15/95

(166)

Problem depart Site 25  
Kathleen Norino  
and Destiny Greenway-  
depart Dubueth ANGB  
for Federal Express  
(3) soil samples  
of (1) duplicate  
(1) Trip blank.

Tuesday 5/16/95

(167)

Weather: Cloudy, showers  
earlier, showers expected this  
morning (?); 50's; gentle  
wind - foggy on the hill  
645 arrived at Dubueth ANGB

Joe Byrd, Jr.  
Kathleen Norino-

Destiny Greenway  
Kathryn Pittcher  
Calibrated PID &

700

MX251 as per  
procedures stated in  
Pg 20 of this field  
logbook.

745

Health & Safety  
meeting

Destiny Greenway  
Kathleen Norino  
Kathryn Pittcher  
James Turner  
Jonathan G. G. G.

James Turner informed  
us that he felt ill  
into the night, he felt  
fine this morning  
Kathy Pittcher

Kathy Pittcher



70

5/16/95

Mud adjoining to the  
surface ~ 15' BLS  
→ may be perched  
water (if)

collected 18-20'

0% Recovery

0 ppm

0 LEL 20.4% O<sub>2</sub>

collected 20-22'

0 ppm

0 ppm 0 LEL

20.5% O<sub>2</sub>

Drillers decontaminating

airline as per procedure  
stated on page 24

of field logbook

Mixed to 2.5-004 BH

collected 0.5-2.5'

0 ppm

collected 5-7'

0 ppm

collected 10-12'

0 ppm

0 LEL 20.4% O<sub>2</sub>

Borehole

Kathy Pritchett

1000

Borehole

1345

Borehole

1030

1117

1125

1135

1140

71

5/16/95

Borehole

0 LEL 20.4% O<sub>2</sub>

collected 18-20' BLS

0 ppm

Borehole

0 LEL 20.4% O<sub>2</sub>

Mixed 021-026 BH

collected 0.5-2.5'

0.1 ppm

collected 4-6'

2.8 ppm

collected 8-10'

0 ppm

Borehole

0 LEL 20.5% O<sub>2</sub>

Recollecting 0.5-2.5'

0 ppm

Moved to 021-027 BH

collected 0.5-2.5'

0 ppm

Borehole

0 ppm

0 LEL 20.5% O<sub>2</sub>

collected 4-6' oppn

0 ppm

0 LEL 20.5% O<sub>2</sub>

Kathy Pritchett

72

5/16/95

1450

collected 8-10' x.s.

D ppm

duplicate collected

moved 021-028BH

collected 0.5-2.5'

D ppm

collected 4-6'

D ppm

water encountered

called Paul Wheeler

(ANGRC) to have

an additional soil boring

west of MGBNS area

— yea. → just

drill 2.0' ~~ft~~ less at

Site 17 for adjustment

of cont.

Dullers grouting

backhole; no per work.

Plan

Arrived at Federal

express

11) equipment invoice

(4) Soil Samples

1700

airbill

#

4530735790

Kathy Pittman

1717

5/16/95

73

Arrived at Lake

Superior Laboratories

(6) Soil Samples

(1) Duplicate

(1) ms/msd

COC No. 12592

Kathy

Pittman

(74)

Wednesday 5/17/95

Weather: Sunny, cool -  
high 50's; low 40's; wind died  
at 33°F; windy; NW  
10-15 mph

645 Arrived at Duluth AVG  
arrived  
at low

Destry Greenway  
Kathryn Fritchett

for Byrd, Jr.

Kathryn Fritchett

Calibrated PID &

MX251 as per procedure

stated on page 20 of

this field logbook.

Dillner arrived

Janice Turner

Jonathan Galinski

Dillner decontaminating

digress as per procedure.

ended on page 21 of this

field logbook.

finished decontaminating

Sketch & Safety meeting

Janice Turner

Jonathan Galinski

700

730

745

820

5/17/95

(75)

Destry Greenway  
Kathryn Fritchett  
Kathryn Fritchett

Moved to 025-0121541

(north of mesa area)

Collected 0.5-2.5'

0 ppm

Collected 5-7'

4.6 ppm

0 ppm

0 LEL 20.5% O<sub>2</sub>

Collected 10-12'

7.5 ppm

Borehole

8.5 ppm before

0 ppm after sample

0 LEL 20.5% O<sub>2</sub>

Collected 18-20'

4.5 ppm

Borehole

3.5 ppm

2 LEL 20.5% O<sub>2</sub>

Moved to 025-00884

Collected 0.5-2.5'

0 ppm

Borehole

0 ppm

0 LEL 20.5% O<sub>2</sub>

Kathryn Fritchett

(76)

5/17/95

935

Collected 5-7'

0 ppm  
0 ppm

Borehole

OLEL 20.5% O<sub>2</sub>

1004

Collected 10-12'

0 ppm

Borehole

OLEL 20.4% O<sub>2</sub>

1015

Collected 16-20'

0 ppm

Borehole

OLEL 20.5% O<sub>2</sub>

1100

Drillers decontaminating

bitting a augers as

per procedures stated on

page 24 of this field

logbook

Drillers grouted boreholes

1020-

1100

1100-

1130

1145

Setting up at Site 17

Drillers left Ductwork area

to migrate to Site 17

Kath Patelott

(77)

5/17/95

1315

017-024 BH

Collected 0.5-2.5'

0 ppm

1337

Collected 4-6'

0 ppm

Borehole

4-BG OLEL 20.5% O<sub>2</sub>

Feet 1 Silt 0-6.5'

6.5-10'

Silt w/ lime and

1350

Moved to 017-025 BH

1400

Collected 0.5-2.5'

0 ppm

1405

Collected 4-6' Feet

0 ppm

Borehole

OLEL 20.5% O<sub>2</sub>

1415

Moved to 017-022 BH

1420

Collected 0.5-2.5'

0 ppm

1430

Collected 4-6'

water at 3.5' 20% Recovery

Borehole

OLEL 20.5% O<sub>2</sub>

Kath Patelott

(98)

5/17/95 017-023 BH

1445

Moved to 024BH

Collected 0.5 - 2.5'

1507

0 ppm  
Collected 4-6'

0 ppm

water encountered at ~4' BLS

1520

Moved to 017-028BH

1535

Collected 0.5 - 2.5'

0 ppm

Collected 4-6'

water encountered 0 ppm

note: It was a prairie-wildow day at Site 17

1600

Collected effluent  
kinesthetic - split open

Site 17

(3) 40-ml tuff HCL

WDNR

6/20/90

SOX (2270) 11 1L amber

Hg (7470) 11 1L Poly HNO<sub>3</sub>

need Lake Superior lab

at Duluth ANG 0

WDNR (9) Soil Samples

6/20/90 (1) Equipment Kinesthetic

Kathy Pittsford

(79)

5/17/95

Arrived at Federal

Express

Arrived at Site 17 to

load supplies

Depart Duluth ANG

1715

1745

1830

KD

Kathy Pittsford



(80)

Thursday 5/16/95

Weather: Sunny; 60°  
Arrived at Duluth  
ANL-8

Joe Byrd, Jr.  
Desty Greenway  
Kathleen Marin  
Kathryn Pittblott

7:15 PID were calibrated  
by Joe Byrd, Jr.  
as per procedures stated  
on page 20 of this

field notebook.

Called (Kathleen)

Lake Superior Lab-

(Tim Buck) to confirm

obtaining analytical

results for soil

samples delivered

Thursday + Wednesday -

stated that these were

a 24-hour turnaround

called Russell Cason

about the above -

off he will inform

Mark E. Overman (Optek)

Kathryn Pittblott

2. 230

5/18/95 (81)

Arrived at 025-001m

Kathleen Marin

Kathryn Pittblott

Joe Byrd, Jr. ad

Desty Greenway

at Site 26 collecting

groundwater samples

10/18 PID 022.640 ppm

W.L. = 22.94% BTDC 48

TD = 39.81, BTDC 22.00

Transducer 17.10

Start slug test

— injection at 025-001m

stopped test

Started withdrawal

test on 025-001m

stopped test

Stopped to cool down

— been in sun too

long.

025-003m

53.0 ppm

W.L. 48.04% BTDC

TD 22.00, BTDC

Kathryn Pittblott

(82)

5/18/95

1531 11:05 AM Tundra  
Static  
1534 Start injection  
test - 025-03ms  
1638 Stopped test  
1646 Started withdraw  
test  
1800 Stopped test  
1845 Depart Duluth  
ANG 13

Friday 5/19/95

(83)

Weather: Sunny; 50-60°  
Light winds;  
Arrived at Duluth ANG  
645 Doty Greenway  
Kathleen Merino  
Joe Synd / Jr.  
Kathy Pritchett  
715 Calibrated PIDs &  
MX 251 as per procedure  
stated on page 20 of the  
field logbook  
825 Called VREM -  
will meet them at  
1530 at site 25  
830 Puller arrived with  
drill rig  
835 Health & Safety meeting  
Doty Greenway  
Kathleen Merino  
Jignie Turner  
Jingnan Cyprial  
Kathy Pritchett  
844 Arrived at 017-051044  
853 Collected 0.5-2.5  
25% recovery  
Kathy Pritchett

SP

Kathy Pritchett

(84)

5/19/95

856 water encountered 0 ppm  
Collected 4-6' <sup>860</sup> Borehole 0 ppm  
860 Recollected 0.5-2.5' <sup>860</sup> Borehole 0.5-2.5' <sup>860</sup> Borehole  
15% Recovery  
0 ppm

910 Recollected 0.5-2.5' 0 ppm

915 moved to 017-021 BH  
920 Collected 0.5-2.5' 0 ppm

925 water encountered 0 ppm  
Collected 4-6' 0 ppm

935 Moved to 017-032 BH  
942 Collected 0.5-2.5' 0 ppm

water encountered

Moved to 017-030 BH

Collected 0.5-2.5' 0 ppm

water encountered  
Collected 4-6' 0 ppm

0 ppm  
Duplicate collected for TPH G20/Dec

Moved 017-029 BH

Kathy Pittard

5/19/95

(85)

1027 Collected 0.5-2.5' water encountered 45% Recovery  
1035 Recollected 0.5-2.5' 0 ppm

Duplicate collected for SWCC, Hy (SPL) & TPH (Laser System)

1040-1110 Drillers grouting  
soil boring with 3% bentonite powder & 97% neat cement

1130-1230 lunch  
1240 Collected equipment immediate - split

spoon  
WDNR G20/Dec (3) 40-ml. vial HCL  
Sx (6270) (1) 1 L amber  
14 (7470) (1) 1 L P<sub>2</sub>O<sub>5</sub> HNO<sub>3</sub>  
1330 Moist Lake Superior Lab. at Duluth ANGL Coate

to relinquish:

(7) Soil Samples

(2) Duplicate

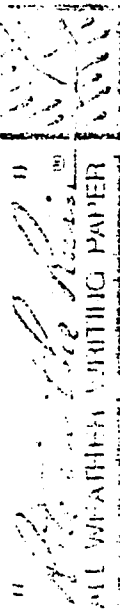
(1) ms/mSD

(1) Equipment Rinse - split

Kathy Pittard

800-937-6MAN

3



Joe Byrd, Jr.

Project Scientist

4100 NW Loop 410, #230

SAN Antonio, TX 78229

Phone: (210) 731-0000 1-800-677-8072

DULUTH 1315-197

c/o CAPT. Stephen Wabrowetz

148 FG/UGPT, Bldg. 240

4625 Deuce, Duluth, MN 55811

(218) 723-7475

(218) 723-7476 (FAX)

Radisson Hotel - Duluth

505 W. Superior Street

DULUTH, MN 55802

(218) 727-8981

J.L. DASHING CORPORATION  
DULUTH, MN 55802 USA

DAY 16

63

WEDNESDAY

17 MAY 15

0545 Leave hotel

BREAKFAST (0.5)

0635 On base

Set up & PROGRAM GC.

Build 10 PPM, 1 PPM, &

100 PPB BTX STDs.

GAIN

1,000

CARRIER GAS FLOW

12  $\mu$ l/min

Injection Vol

100  $\mu$ l

GC OVEN Temp

90°C

ANALYSIS Time

460 sec

0726 100 PPB BTX STD.

Good Run, Set Library. JB

NO O-Xylene. Increase Run

Time to 500 sec.

0742 100 PPB BTX STD

NO O-Xylene.

--- Adjust DRV 3 & DRV 4

to (5 + A/6)

0757 100 PPB BTX STD

Good Run. Set Library

0815 1 PPM BTX STD

Good Run. Set Library

17 MAY 95

(64)

0830 10 PPM BTEX STD  
0845 Good Run. Set Library  
AIR BLANK

● Benzene 1 ppb  
● Toluene 12 ppb  
● mp-Xylene 83 ppb  
● o-Xylene 20 ppb  
0858 021-027BH 4'-6'

10g

● Benzene 1 ppb  
● Toluene 3 ppb  
● mp-Xylene 31 ppb  
● o-Xylene 11 ppb  
0910 021-027BH 8'-10'

10g

● Toluene 3 ppb  
● E-Benzene 3 ppb  
● mp-Xylene 8 ppb  
● o-Xylene 4 ppb  
0921 AIR BLANK

● Benzene 2 ppb  
● Toluene 1 ppb  
0934 021-028BH 05'-2.5'

10g

● Toluene 2 ppb  
● E-Benzene 2 ppb  
● mp-Xylene 3 ppb

St. Brink

17 MAY 95

(65)

● O-Xylene	2 ppb		
0946 021-028BH			
● Toluene	2 ppb		
● E-Benzene	3 ppb		
● MP-Xylene	5 ppb		
● O-Xylene	5 ppb		
0958 100 PPB BTX STD			CAL
Benzene	97 ppb	100 ppb	
Toluene	70 ppb	100 ppb	
E-Benzene	62 ppb	100 ppb	
MP-Xylene	119 ppb	200 ppb	
O-Xylene	51 ppb	100 ppb	
1013 AIR BLANK			
● Benzene	3 ppb		
● E-Benzene	1 ppb		
1034 025-012BH	0.5'-2.5'	10g	
● Benzene	3 ppb		
● Toluene	21 ppb		
● E-Benzene	17 ppb		
● O-Xylene	39 ppb		
1040 025-012BH	5'-7'	10g	
● A lot of Peaks, No Readings			

*J. B. [Signature]*

17 MAY 95

(66)

1101	025-012BH	5'-7' Reshot	10g
--- 20ul injection			
● ALL ND'S			
1112	025-012BH	10'-12'	10g
● Benzene			
			48 ppb
● Toluene			
			31 ppb
● E-Benzene			
			4 ppb
● O-Xylene			
			14 ppb
1124	025-012BH	18'-20'	10g
● Benzene			
			41 ppb
● Toluene			
			46 ppb
CLEAN AREA			
1145	<del>4400</del> 33	Goto Site 17	
1200	Lunch (1.0)		
1300	At Site 17	Goto B252	
1321	100 PPB	BTEX STD.	CAL
Benzene			77 ppb 100 ppb
Toluene			84 ppb 100 ppb
E-Benzene			80 ppb 100 ppb
MP-Xylene			151 ppb 200 ppb
O-Xylene			78 ppb 100 ppb
			JB

J. Byrd



17 MAY 95

(67)

1336 AIR BLANK

- Benzene 3 ppb
- E-Benzene 1 ppb
- O-Xylene 73 ppb

1347 025-013BH 0.5'-2.5'

- Benzene 4 ppb
- Toluene 3 ppb
- E-Benzene 1 ppb
- MP-Xylene 3 ppb

1359 025-013BH 5'-7'

- Benzene 3 ppb
- Toluene 2 ppb
- E-Benzene 20 ppb
- O-Xylene 106 ppb

1411 025-013BH 10'-12'

- Benzene 4 ppb
- Toluene 2 ppb
- E-Benzene 4 ppb
- MP-Xylene 2 ppb

1429 025-013BH 18'-20'

- Benzene 10 ppb
- Toluene 17 ppb
- E-Benzene 3 ppb
- O-Xylene 4 ppb

*J. Byrd*

12g

10g

10g

10g

17 MAY 95

(68)

PROCEDURE

1441	100 PPB BTX STD	96	92	87	178	93	100	100	100	200	100
	Benzene	1 ppb	1 ppb	1 ppb	1 ppb	1 ppb	100	100	100	200	100
	Toluene										
	E-Benzene										
	MP-Xylene										
	O-Xylene										
	---										
1509	AIR BLANK										
	● BENZENE	1 ppb									
1521	017-024BH	0.5-2.5'									6g
	● BENZENE	1 ppb									
	● E-Benzene	8 ppb									
	● O-Xylene	13 ppb									
1533	017-024BH	4'-6'									10g
	● BENZENE	4 ppb									
	● Toluene	1 ppb									
	● MP-Xylene	44 ppb									
1546	017-024BH	8'-10'									15g
	● 5										
1546	017-024BH	0.5'-2.5'									10g
	● BENZENE	6 ppb									
	● Toluene	1 ppb									
	● E-Benzene	4 ppb									

Hynd

GC PROCEDURES

(69)

17 MAY 95

1558	● MP-Xylene	9 ppb	15g
	● 017-024BH	8'-10'	
	● Benzene	11 ppb	
	● E-Benzene	16 ppb	
	● O-Xylene	4 ppb	
1610	● 017-025BH	4'-6'	10g
	● Benzene	6 ppb	
	● Toluene	1 ppb	
	● E-Benzene	4 ppb	
1622	100 PPB BTX STD		CAL
	Benzene	96 ppb	100 ppb
	Toluene	81 ppb	100 ppb
	E-Benzene	64 ppb	100 ppb
	MP-Xylene	115 ppb	200 ppb
	O-Xylene	108 ppb	100 ppb
1636	AIR BLANK		
	● Benzene	5 ppb	
	● E-Benzene	4 ppb	
	● Toluene	4 ppb	
1648	● O-Xylene	0.5'-2.5'	10g
	● 017-022BH		
	● Benzene	5 ppb	
	● Toluene	3 ppb	

*[Signature]*

17 MAY 95

(70)

● E-BENZENE	7 ppb	10g
● MP-XYLENE	12 ppb	
● O-XYLENE	1 ppb	
1659 017-0238H	0.5'-2.5'	
● Benzene	3 ppb	
● Toluene	3 ppb	
● E-Benzene	7 ppb	
● MP-XYLENE	9 ppb	
1713 017-0238H	4'-6'	10g
● Benzene	10 ppb	
● Toluene	3 ppb	
● E-Benzene	37 ppb	
● MP-XYLENE	98 ppb	
1724 017-0286H	0.5'-2.5'	10g
● Benzene	13 ppb	
● Toluene	3 ppb	
● E-Benzene	4 ppb	
1736 017-0288H	4'-6'	6g
● Benzene	3 ppb	
● E-Benzene	5 ppb	



Continued in Book 2



FRIDAY

14 MAY 45

0545 leave hotel  
Breakfast (0.6)

0645 On Base  
load truck

0710 Fire-up GC. Build 10 PPM,  
1 PPM, & 100 PPM BTEX  
STD's

0740 AIR FLOW IS NOT WORKING RIGHT.  
CALL EIS to see if they  
can troubleshoot.

0757 Drive KP to Site 17.

0825 BACK @ B252.

TALK to M. Alexander.  
Fiddle w/ GC.

It won't go. Call EIS.

Ren is out. Waiting on  
his call back

0912 Goto Site 17 to

approve KP of situation

0945 BACK @ B252

CALL EIS.

Attempt to backflush.

*JTB*

DO YOU KNOW  
OR  
MULTIPLE

total	540	total	540
avg.	20400	avg.	20400
std	6014	std	6014
mean	1069	mean	1069
variance	0.018	variance	0.018
skewness	0.92	skewness	0.92
kurtosis	1.90	kurtosis	1.90
entropy	1.03	entropy	1.03
correlation	0.021	correlation	0.021
result		result	

[illegible][illegible]

100

Year	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	

[illegible]

25	4.00
30	6.00
40	10.00
50	15.00
60	20.00
70	25.00
80	30.00
90	35.00
100	40.00
110	45.00
120	50.00
130	55.00
140	60.00
150	65.00
160	70.00
170	75.00
180	80.00
190	85.00
200	90.00
210	95.00
220	100.00
230	105.00
240	110.00
250	115.00
260	120.00
270	125.00
280	130.00
290	135.00
300	140.00
310	145.00
320	150.00
330	155.00
340	160.00
350	165.00
360	170.00
370	175.00
380	180.00
390	185.00
400	190.00
410	195.00
420	200.00
430	205.00
440	210.00
450	215.00
460	220.00
470	225.00
480	230.00
490	235.00
500	240.00
510	245.00
520	250.00
530	255.00
540	260.00
550	265.00
560	270.00
570	275.00
580	280.00
590	285.00
600	290.00
610	295.00
620	300.00
630	305.00
640	310.00
650	315.00
660	320.00
670	325.00
680	330.00
690	335.00
700	340.00
710	345.00
720	350.00
730	355.00
740	360.00
750	365.00
760	370.00
770	375.00
780	380.00
790	385.00
800	390.00
810	395.00
820	400.00
830	405.00
840	410.00
850	415.00
860	420.00
870	425.00
880	430.00
890	435.00
900	440.00
910	445.00
920	450.00
930	455.00
940	460.00
950	465.00
960	470.00
970	475.00
980	480.00
990	485.00
1000	490.00

[illegible]

A. Kathleen Merino (K.M.)

4100 NW Loop 410, Ste 230  
San Antonio, TX 78229  
(210) 731-0000 1-800-677-8071

Duluth ST Sites 26, 25

Radisson Hotel (218) 727-8981

to be the best," a company that sells a variety of information products, "not to offend the author's sense of propriety." The company's motto of "letting the customer be the judge" is a good one.

J. I. BARRETT CORPORATION  
P. O. BOX 3021 BOSTON, MA

16 May 95  
0545

0630  
0645  
0800

0820

0827  
0835  
0840  
0850

0900  
0935  
0940  
0950  
1001  
1015

1020  
1025-  
1110

Met hotel, breakfast  
planning meeting  
left for base and  
arrived at base  
Set up for site  
and H & S briefing  
collected 5-2.5  
at 025-007814

Sample 6 5-7  
" 10-12 LAB #12  
" 15-17  
" 20-22

TD = 22'  
Moved to 025-005814

Sample 6 0.5-2.5  
" 5-7 No. rec.  
" 10-12 LAB #12  
" 18-20 No. rec.  
" 20-22

TD = 22'  
Ditto 10/15 remove auger  
Ditto Decon auger

A. K.

1115  
1125  
1135  
1140  
1150  
1200  
1300-  
1330  
1355  
1400  
1405  
1415  
1430-  
1435  
1440  
1450  
1458

1510  
1525  
1535  
1535 again  
1535

ID=61

Setup at 025-004BH  
Sample @ 5-2.5  
" 5-7  
" 10-12 LAB 11.5-  
" 18-20 LAB 11.5-  
UNPH

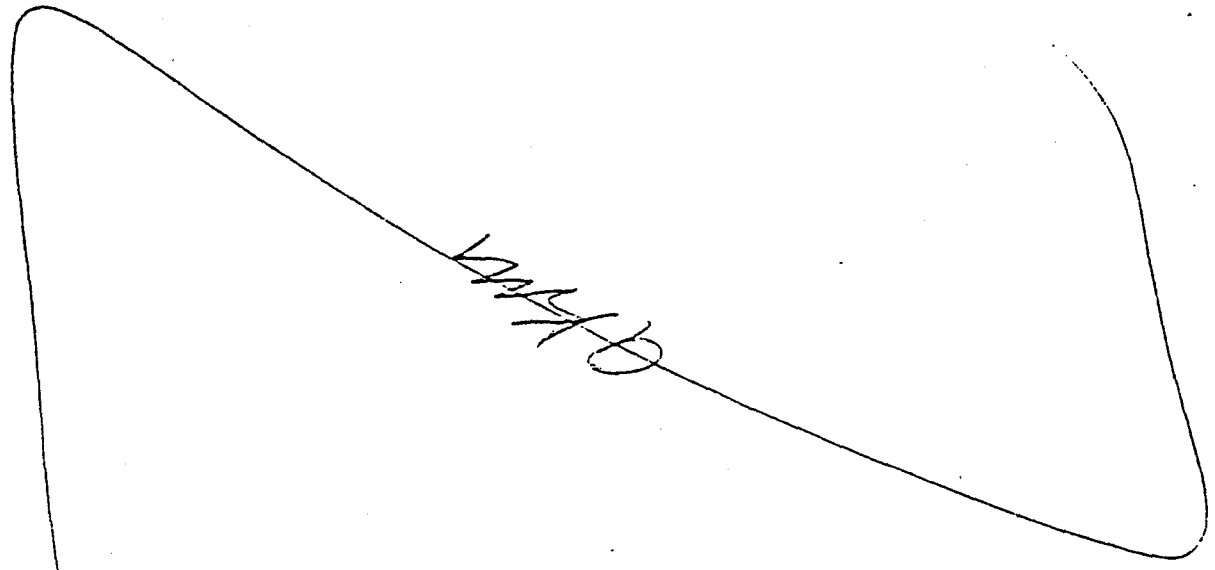
Set up at site 21  
Setup 21-026 BH

Sample @ 5-2.5 <sup>RD</sup> recover  
" 4-6  
" 8-10 LAB 9.0-  
" 5-2.5 LAB 2.0-  
Move to 21-027 BH

Sample @ 5-2.5  
" 4-6 LAB 5.5-  
" 8-10 LAB  
Sample 9.5-10 <sup>marked</sup> 9-10  
Sample 7.0-9.5 <sup>marked</sup> 8-9  
Move to 026-028BH

Sample @ 5-2.5  
LAB 2.0-2.5 <sup>15/10/50</sup> 1.5-2.0  
Sample @ 8-10 <sup>4-6</sup> 4-6  
LAB 5.5-6.0

A. J. [Signature]





16 May 95  
1400-0741  
1800

Packed sample cooler;  
unpacked supplies;  
took equip blanks;  
shipped sampler  
from Site 25 at  
Feed EX and  
dropped Site 21  
Sample @ Lake  
Superior Lab  
END OF DATA

2/14/0

2/14/0

2/14/0

17 May 95

12.13 at K.W. collected drum

1005 sample @ 10-12 11.5-11.1 AB  
1015 " 18-20

1030- Broke down site  
1330 set up at site 17,  
L.W. NHC

1333 Sample @ 1.5-2.5 1.5-2 LAB  
1340 " 4-6 5-5.5 LAB  
1345 " 8-10 no lab

1355 from 017-024 BH  
1400 Moved to 017-025 BH  
1405 Sample @ 5-2.5 1.5-2 LAB  
" 4-6 5-5.5 LAB

1410 Moved to 017-022 BH  
1425 Sample @ 5-2.5 1.5-2 LAB  
1430 " 4-6 NO LAB

1450 Moved to 017-023 BH  
1455 Sample @ 5-2.5 1.5-2 LAB  
1502 " 4-6 5-5.5 LAB

1500 Moved to 017-028 BH  
1535 Sample @ 5-2.5 1.5-2 LAB  
1545 " 4-6 5-5.5 LAB

A. K. M.

17 May 95  
1600 L  
1845

Pack coolers, clean-  
up site, went  
to Fed EX to  
drop off samples  
return to Site 17.  
Packed supplies  
Returned to  
Hotel  
END OF DAY

1845

1845

A. Foster

18 May  
0545

Weather: sunny, warm to 75°  
Met in lobby, breakfast  
Planning meeting  
Arrived base about  
Prepared for sampling  
and ~~about~~ slug

0630

Resting.

0745-  
0815  
0830

Went to hardware  
store for supplies.  
Called Mike Superior  
Lab. Tim will send

GRO results now, and  
DRO will come later.  
Results from yesterday  
are to be fax tonight

0835  
0915

K.P. calling office  
Finish packing  
supplies and preparing  
sample bottles.

1000

Packed down  
drillers to obtain  
sample. Monitor well  
preps for sampling

A. K. R.

1015	Started sleep test
	for 025-00, MW
1337	Stopped test
1545-	Obtained lunch and
1515	brought supplies
1530	Started test for
	025-003 MW
1800	Stopped test
1830	Left base
1900	Arrived back at
	hotel
	END OF DAY

Alma

*[Signature]*

Weather:

19 May 95 Sunny, warm, 70°F ☺

0643 Arrive at base and

load supplies

Move to Site 17 and

prepare for drilling

Setup core (017-31BH)

Sample @ 5-2.5 polat

4-6 (5.5-6  
5-5.5)

" 5-2.5 no lat

" 5-2.5 (2-2.5  
3-2.2)

Move to 017-021BH

Sample @ 5-2.5 (2-2.5  
1-5-2)

" 4-6 (5.5-6  
5-5.5)

Move to 017-032BH

Sample @ 5-2.5 (2-2.5  
1.5-2)

Move to 017-030BH

Sample @ 5-2.5 (2-2.5  
1.5-2)

" 4-6 (4.5-5.5  
5-5.2  
5.5-5.5)

Move to 017-029BH

Sample @ 5-2.5 (no recovery)

4-6 (4.5-5.5  
5-5.2  
5.5-5.5)

Sample @ 5-2.5 (2-2.5  
1.5-2)

9-10

0715-

0800

0835

0845

0858

0901

0910

0920

0925

0945

1000<sup>144</sup>

1000

1015

1020

1032

19 May 95  
1100-1200 <sup>noon</sup>  
1200-1345  
1500  
1500-1800

1800-1830

1830-  
1900

LUNH  
Sleep Test  
025-002MW  
Pack supplies  
and samples  
decon sleep  
equipment  
Drop samples  
at Fed Ex  
Flight cancelled  
return to Radisson  
Hotel

WALD

A. K. M.

Destry Greenway with  
Operational Technologies  
4100 NW Loop 410 Ste. 230  
San Antonio, TX 78229  
1-800-677-8072

Duluth ANG 1315-197



(14)

Wednesday 5-10-95

0555 Leave motel  
 0640 Depart breakfast  
 0645 Arrive at base. Set up decon, get ready for drilling at Site 25.  
 0740 Begin decon (see pg. 1)  
 0810 Health and Safety meeting with drillers and Optech crew.  
 0815 Resume decon  
 1130 Decon complete. Break for lunch  
 1230 Return from lunch. Observe drillers completing well. Move decon equip. to next well.  
 1420 Begin decon  
 1700 Decon complete. Check on Joe at Site 26.  
 1755 Leave base

No further entries  
 D-37 Drummy

(15)

Thursday 5-11-95

0550 Leave motel  
 0640 Depart breakfast  
 0645 Arrive at base. Set up decon. prepare for day's drilling.  
 0740 Health and Safety meeting with drillers and Optech crew.  
 0815 Copy log forms and field notebooks  
 0900 Copying complete. Observe Joe and GIC work.  
 1100 Break for lunch  
 1205 Arrive at Site 17 to check stakes  
 1225 Arrive at base. Prepare for 225-003 MW.  
 1400 Begin decon (see pg. 1)  
 1505 Decon complete. Break down everything.  
 1650 Leave base

No further entries  
 D-37 Drummy

(16)

Friday 5-12-95

0550 Leave motel  
 0640 Depart breakfast  
 0650 Arrive at base. Calibrate Hydacs  
 and turbidity meters.  
 0710 ~~Calibrate~~ Set up decon.  
 0725 Health and Safety meeting with  
 drillers and Optech crew.  
 1015 Begin decon (see pg. 1) on Site 25  
 boreholes  
 1130 Break for lunch  
 1240 Return from lunch. Begin decon.  
 1600 Decon complete. Break down equip.  
 Prepare for Monday.  
 1725 Leave base  
 1730 Arrive at FedEx  
 1740 Leave FedEx

No further entries  
 Duty Drums

(17)

Monday 5-15-95

0550 Leave motel  
 0640 Depart breakfast  
 0645 Arrive at base. Set up decon, other  
 equip.  
 0800 Begin decon (see pg. 1)  
 0930 Health and Safety meeting  
 0935 Resume decon  
 1130 Break for lunch  
 1220 Return from lunch. Resume decon  
 1225 Go to store to get supplies.  
 1300 Return to base. Resume decon  
 1430 Decon complete. 025-002BH  
 was discontinued because of  
 LEL alarm after conferring with  
 drillers.  
 1520 Resume decon  
 1655 Decon complete. Break down  
 equip.  
 1735 Leave base  
 1740 Arrive at FedEx  
 1750 Leave FedEx

No further entries  
 Duty Drums

(18)

Tuesday. 5-16-95

1 0550 Leave motel  
1 0640 Depart breakfast  
1 0645 Arrive at base. Set up decon. Prepare  
1 0745 for day.  
1 Health and Safety meeting with  
1 drillers and Optech crew.  
1 0810 Begin decon (see pg. 1)  
1200 Decon complete. Break for lunch  
1320 Return from lunch. Resume decon  
1605 Decon complete. Break down  
1740 equip.  
Leave base

~~No further entries  
Deetz Drummy~~

(19)

Wednesday 5-17-95

0555 Leave motel  
0620 Arrive at base  
0730 Begin decon (see pg. 1)  
0825 Health and Safety meeting  
0825 Decon complete. Break down  
1020 equip.  
1055 Leave Site 25  
1115 Arrive at Site 17. Set up equip.  
for sampling.  
1155 Break for lunch  
1310 Return from lunch  
1325 Begin decon  
1705 Decon complete. Pack up equip.  
1800 Leave Site 17  
1810 Arrive at Base  
1825 Leave base

~~No further entries  
Deetz Drummy~~